Better Homes and Gardens®

WOOD®

THE #1 MAGAZINE FOR HOME WOODWORKERS

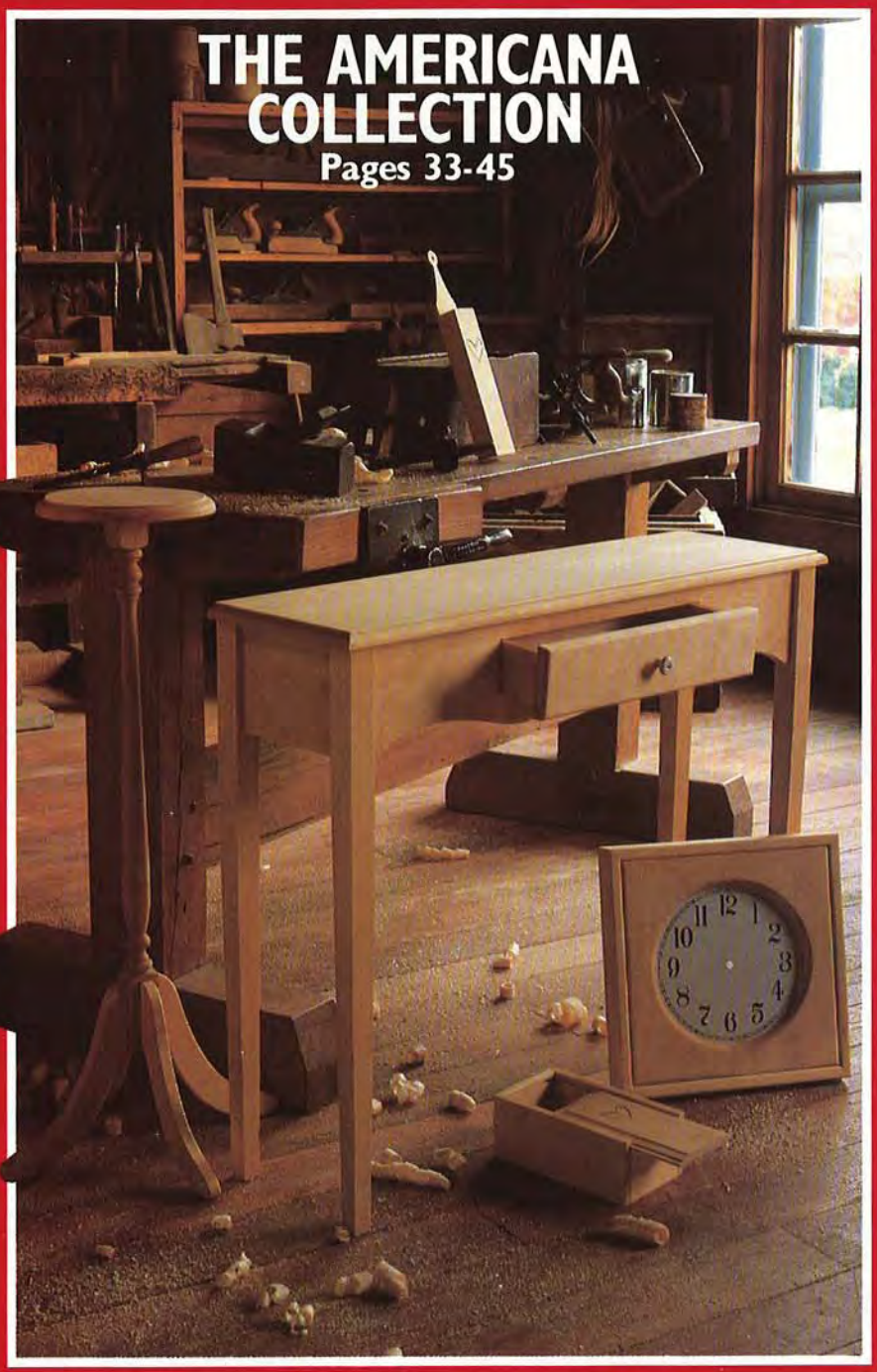
AUGUST 1990 • ISSUE NO. 36
Display until August 14

COUNTRY FINISHES
'Age' your projects with our techniques

Special Report
FIGHT IN THE FOREST
Environmentalists and loggers square off over old-growth forests

ELECTRIC DRILLS
Tips on choosing the right model for your shop

BUILD THESE
5 easy-to-make country projects
Sandbox excavator
Bird feeder
Carved cardinal



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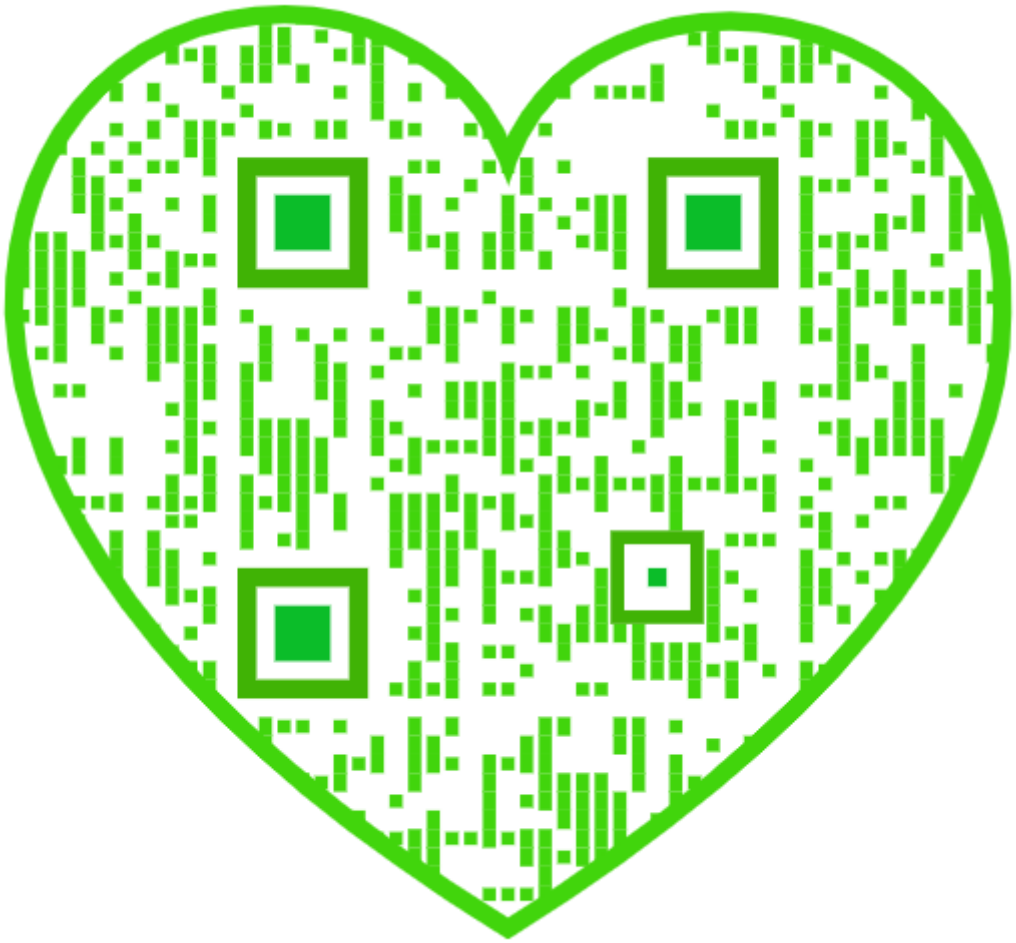

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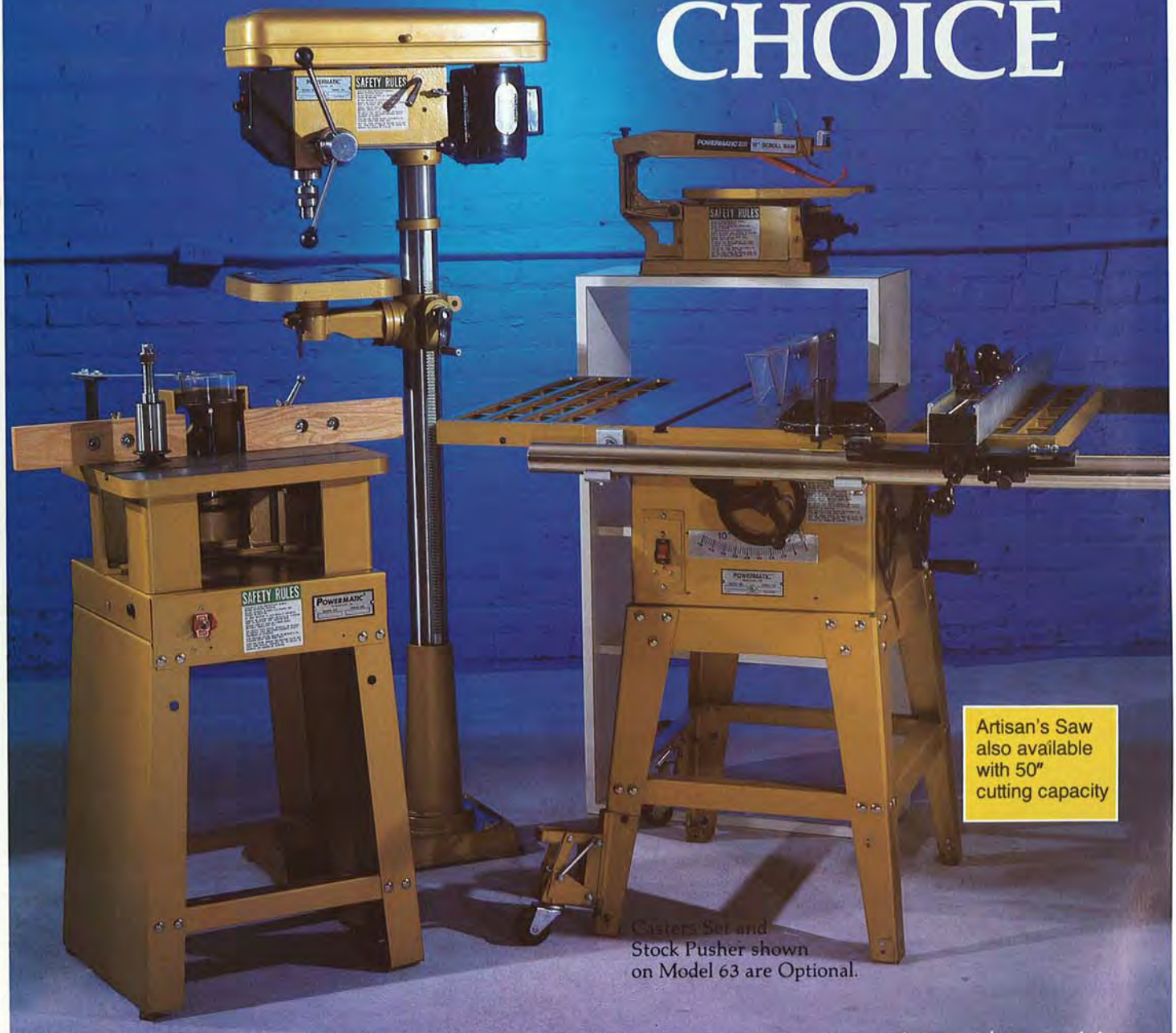

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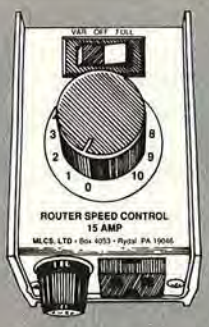

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#491		1½" Classical	¼" R	1½"	¾"	¼"	$25.00
#792		1½" Classical	¼" R	1½"	⅞"	½"	$25.00
#231		5/32" Roman Ogee	5/32" R	1¼"	15/32"	¼"	$17.00
#232		¼" Roman Ogee	¼" R	1½"	¾"	¼"	$18.00
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#340		⅛" Cove	⅛" R	5/8"	3/8"	¼"	$12.00
#341		¼" Cove	¼" R	1"	½"	¼"	$13.00
#342		3/8" Cove	3/8" R	1¼"	9/16"	¼"	$14.00
#343		½" Cove	½" R	1½"	5/8"	¼"	$15.00
#644		¾" Cove	¾" R	1⅞"	¾"	½"	$28.00
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#351		3/16" Round Over	3/16" R	⅞"	½"	¼"	$11.00
#230		¼" Round Over	¼" R	1"	½"	¼"	$12.00
#353		5/16" Round Over	5/16" R	1⅛"	½"	¼"	$14.00
#354		3/8" Round Over	3/8" R	1¼"	5/8"	¼"	$15.50
#355		½" Round Over	½" R	1½"	¾"	¼"	$17.00
#656		¾" Round Over	¾" R	2"	⅞"	½"	$21.00
#370		3/8" Rabbeting	3/8" Deep	1¼"	½"	¼"	$14.00
#670		3/8" Rabbeting	3/8" Deep	1¼"	½"	½"	$14.00
#366		⅛" Slot Cutter	3/8" Deep	1¼"	⅛"	¼"	$14.00
#368		¼" Slot Cutter	3/8" Deep	1¼"	¼"	¼"	$14.00
#403		3/8" Dovetail	9 degree	3/8"	3/8"	¼"	$ 7.50
#405		½" Dovetail	14 degree	½"	½"	¼"	$ 8.50
#409		¾" Dovetail	14 degree	¾"	⅞"	¼"	$10.50
#709		¾" Dovetail	14 degree	¾"	⅞"	½"	$10.50
#402		3/8" Dovetail	8 degree For	3/8"	½"	¼"	$12.00
#404		½" Dovetail	8 degree Leigh	½"	13/16"	¼"	$12.00
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#418		¾" Core Box	round nose	¾"	5/8"	¼"	$15.00
#719		1" Core Box	round nose	1"	¾"	½"	$18.00
#470		¼" Straight	plunge cutting	¼"	¾"	¼"	$ 7.00
#471		5/16" Straight	plunge cutting	5/16"	1"	¼"	$ 7.00
#472		3/8" Straight	plunge cutting	3/8"	1"	¼"	$ 7.00
#473		7/16" Straight	plunge cutting	7/16"	1"	¼"	$ 7.00
#474		½" Straight	plunge cutting	½"	1"	¼"	$ 7.00
#775		½" Straight	plunge cutting	½"	2"	½"	$14.00
#478		5/8" Straight	plunge cutting	5/8"	1"	¼"	$ 8.00
#479		¾" Straight	plunge cutting	¾"	1"	¼"	$10.00
#781		1" Straight	plunge cutting	1"	1½"	½"	$12.00
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#503		½" Flush	Trimming	½"	1"	¼"	$ 8.50
#804		½" Flush	Trimming	½"	13/16"	½"	$ 9.00
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#546		Tongue & Groove	Wedge	13/16"	1"	¼"	$29.00
#846		Tongue & Groove	Wedge	15/8"	1"	½"	$29.00
#450		⅛" Beading	⅛" R	¾"	3/8"	¼"	$11.00
#451		3/16" Beading	3/16" R	⅞"	½"	¼"	$11.00
#233		¼" Beading	¼" R	1"	½"	¼"	$13.00
#453		5/16" Beading	5/16" R	1⅛"	½"	¼"	$14.00
#454		3/8" Beading	3/8" R	1¼"	5/8"	¼"	$15.50
#455		½" Beading	½" R	1½"	¾"	¼"	$17.00
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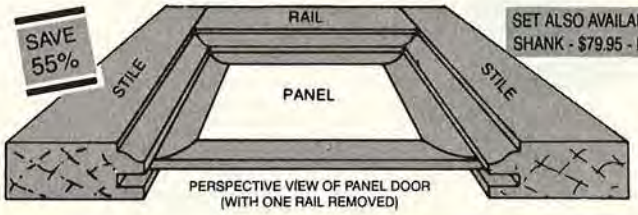

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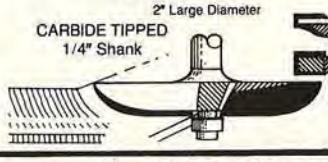

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THE MAGAZINE FOR HOME WOODWORKERS

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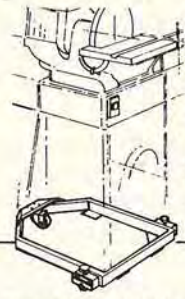

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THE #1 MAGAZINE FOR HOME WOODWORKERS

This issue's cover wood grain: persimmon

AUGUST 1990 ISSUE NO. 36

WOOD PROFILE

Sugar maple: Hard as rock, but how sweet it is! 31

Because of its hardness, maple tests the skills of many woodworkers. You'll find plenty of machining tips in our performance profile.

THE AMERICANA COLLECTION

Sofa table 34

We introduce our country collection of painted projects with a slim table that looks perfect behind a sofa or in a hallway.

Candle box 38

Try your hand at carving the faceted heart that accents this practical pine box with a sliding lid.

Candlestand 40

Get this project off the ground with a pre-turned baluster you can pick up from any homecenter.

Wall box 43

Here's the simplest of all our country projects! And, it's a perfect match for someone's fireplace.

Country clock 44

With a battery-operated movement and schoolhouse-style face, you'll finish this project in no time at all.

SHOP-TESTED TECHNIQUES

Country finishes 46

With the help of a finishing expert, you can learn to "age" your country projects by painting, staining, pickling, and crackling.

Way to go, Bosch! 51

Look at a new jigsaw with click-in blades and a random-orbit sander.

Sandbox excavator 52

We just had to find room in our Fat Cat™ fleet for this heavy-equipment replica. Our staff, who plays with . . . er, test every toy, raves about the realistic scoop and boom.

SPECIAL REPORT

Fight in the forest 57

In the Pacific Northwest, environmentalists and logging interests have locked horns over harvesting old-growth forests.

CRAFTSMAN CLOSE-UP

A Carolina legend in wood 62

Meet P. J. Jeter, a rare man who learned woodworking behind bars and now runs a prison-industry wood shop. And, find out how Mr. Jeter—as he's known by all—ingrains a work ethic in South Carolina inmates.

TOOL BUYMANSHIP

The great electric-drill shootout 66

What's the difference between a $30 drill and a $130 drill? A lot more than $100, as we discovered while testing 18 models.

DEVELOP YOUR SHOP SKILLS

Make raised panels with your tablesaw 72

Who says you need a shaper or router to build a raised-panel door? Conquer this technique in eight easy-to-understand steps.

CARVING PATTERN

Carve a cardinal 74

Lindel Porter of Tulsa, Oklahoma, shares his secrets to carving one of America's favorite songbirds. For your convenience, we've included full-sized patterns.

Fine-feathered-friend feeder 76

Birds should flock to your backyard after they discover our hexagonal feeder. It features a huge seed tray and large storage capacity.

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4th of JULY Sale!

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1-1/2" x 1/8" Hearts	$ 7.00 / 100	6.50
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#17 Screw Eyes 1/2" Long	$ 2.00 / 100	1.50
#14 Screw Eyes 13/16" Long	$ 3.00 / 100	2.00
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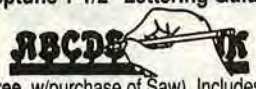

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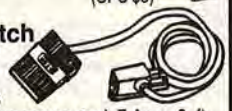

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THE EDITOR'S ANGLE

Q. WHAT'S RED HOT... AND GETTING WARMER?

A. THE ENVIRONMENT IT'S ALL WE HAVE

Not too many years ago, when a few brave souls began to warn people about the dangers of industrial waste to the ozone layer, ground-water pollution, acid rain, lead poisoning of humans and wildfowl, lung damage caused by exposure to asbestos, and any number of other concerns, many Americans did little more than yawn and wonder about these people's mental well being. But that's all changed today. Many of these concerns have become reality, and people are paying attention to the environment like never before. It's darned near impossible on any given day to pick up a newspaper that doesn't have one or more articles dealing with the environment. More specifically, the abuse of it.

And it's just beginning

If the information I've been exposed to lately is correct, debate over the environment will become even more heated in the '90s. One recent national study (Yankelovich Monitor 1989) reveals that in the past three years, "active concern" about the environment has doubled. Ninety-three percent of Americans are "concerned" about what's happening to our planet. Twenty-eight percent are "actively concerned" and support the effort to make needed changes.

In a 1989 study commissioned by *American Demographics* magazine, 97 percent of Americans said they want natural areas preserved for future generations. People everywhere are asking penetrating questions... about the quality of the food they eat, about the safety of the water they drink, even about what's being done to ensure that they will have a plentiful supply of wood in the future. The environment has definitely arrived as a front-burner issue.

We'll keep you informed

Chances are, none of the preceding is news to you. Yet I'm sure that as a woodworker you have your share of questions about the environment as it relates to your favorite hobby. We're concerned here at *WOOD* magazine, too. And that's why we have increased our editorial coverage in this important area. In the October 1989 issue of *WOOD* magazine, for example, we presented our report, "What's Happening to the World's Wood" (pages 46–49). And frankly, reaction to the article was so healthy—both pro and con—that we decided to follow up that piece with another in our environmental series. Beginning on page 57 of this issue, Features Editor Pete Stephano details the "The Fight in the Forest" between the conservationists and the timber-producing industry in the Pacific Northwest. He also prognosticates about the eventual outcome of what has erupted into a truly fearsome battle. Don't miss this article; it's important reading for every woodworker.

As mentioned earlier, the debate is just heating up. As it progresses during the '90s, you can count on *WOOD* magazine to keep you abreast of the situation.

Larry Clayton

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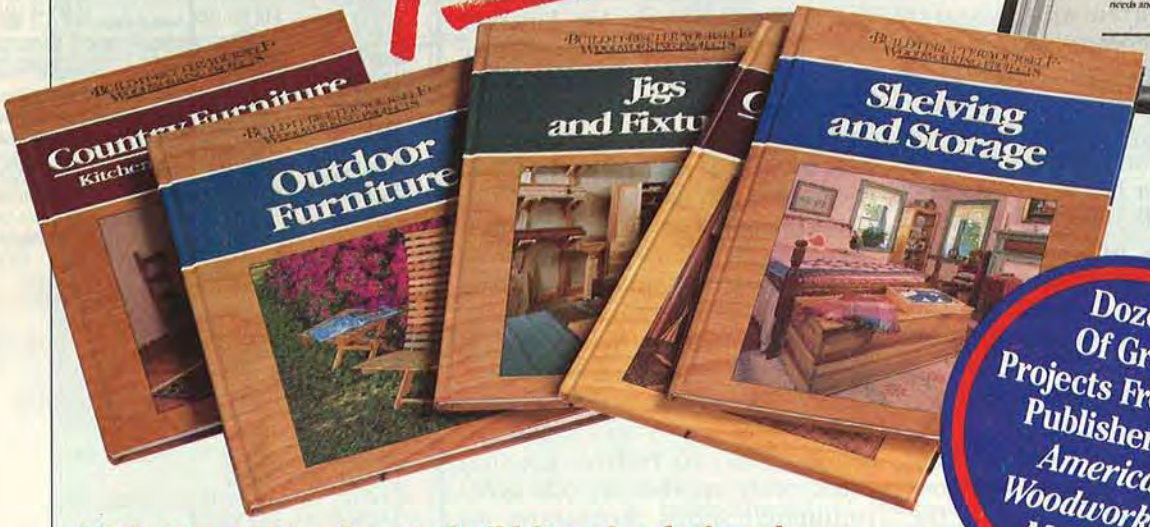

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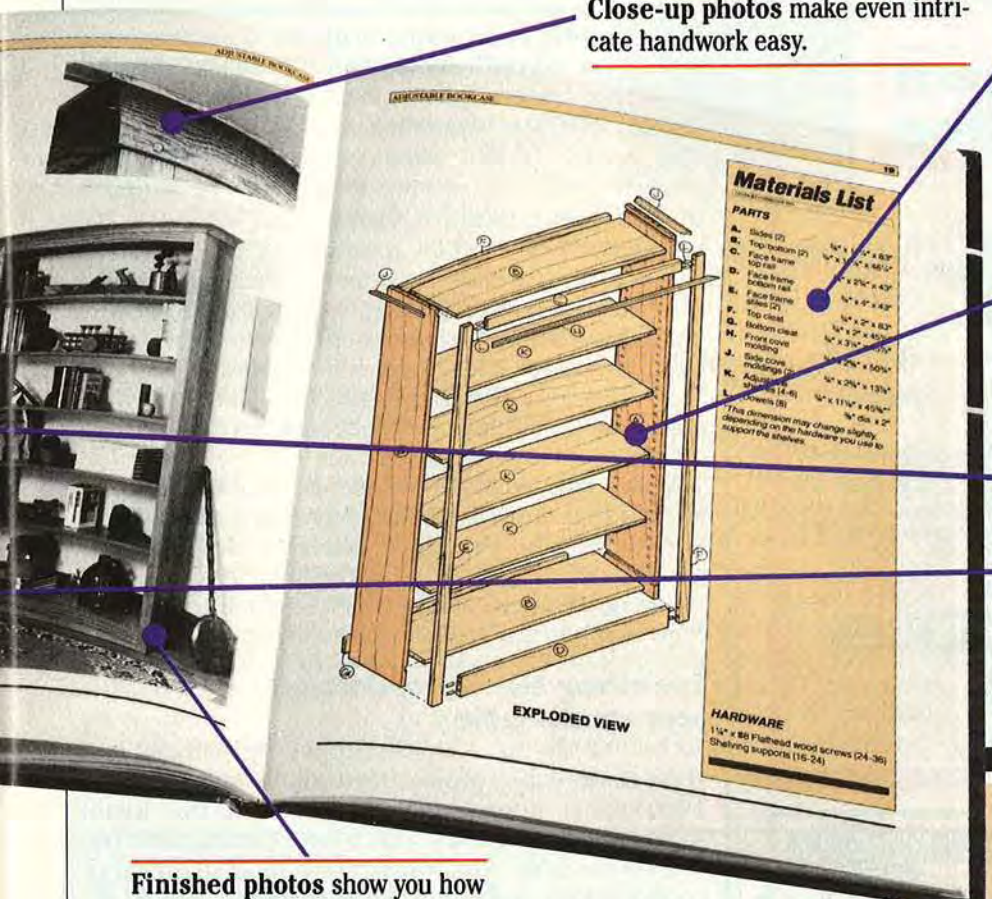

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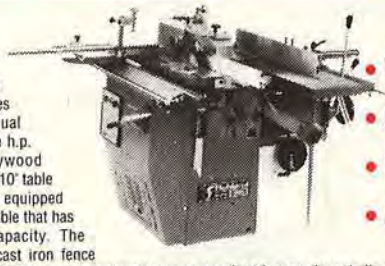

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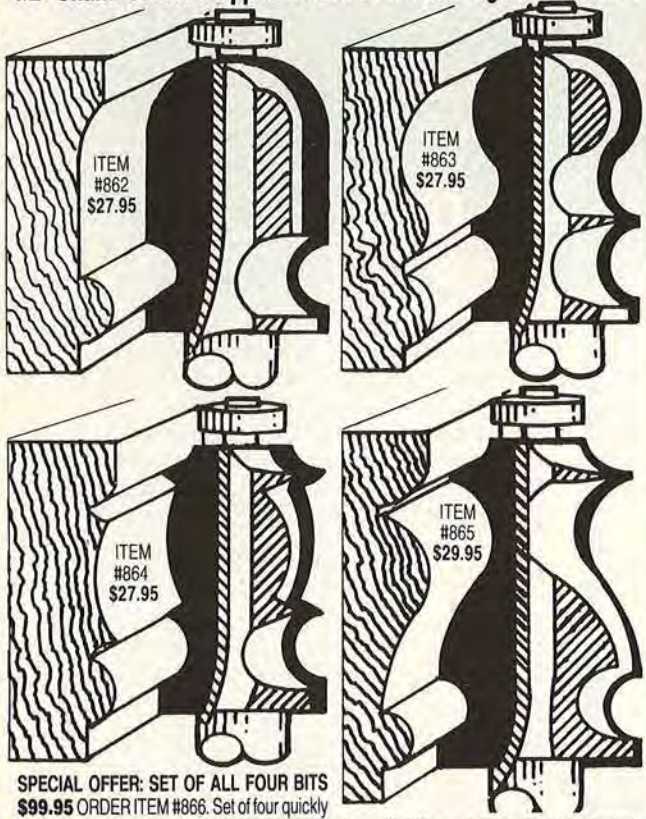

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TALKING BACK

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Letters Editor, Better Homes and Gardens® *WOOD*® Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

It was great while it lasted . . .

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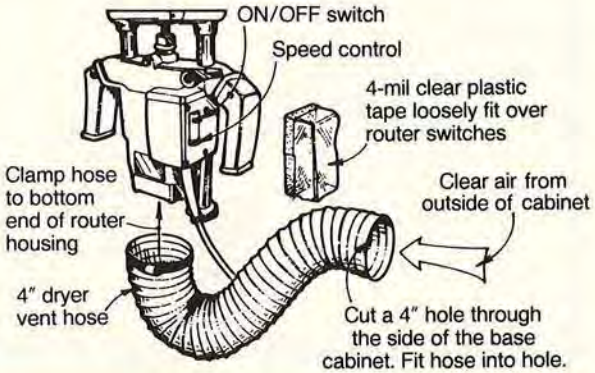
Something else to consider for your router table

I'd like to say that I almost flipped out when I saw your router-table project featured in the February 1990 issue. About a year ago when the Ryobi RE600 came out, I saw this router's immediate use in a router table. My design was almost identical in configuration and dimension to yours.

What prompted this letter are the drawbacks I've experienced and changed. Because the router cooling fan sucks up air from inside the table, I assure you that the switch and speed-control dial cover will fill with fine sawdust. I solved this problem by taping some loosely fitting clear 4-mil plastic over the controls where shown *below.*

One additional change helps protect the router electronics and allows the router to breathe clean, cool air from outside the cabinet. Clamp a flexible 4" dryer vent hose around the top of the router where shown and vent it through the cabinet side.

—Paul Pizzimenti, Medley, Fla.


ON/OFF switch
Speed control
4-mil clear plastic tape loosely fit over router switches
Clamp hose to bottom end of router housing
Clear air from outside of cabinet
4" dryer vent hose
Cut a 4" hole through the side of the base cabinet. Fit hose into hole.

Laminated hinge improves tabletop easel

Congratulations to all the fine people at *WOOD* magazine! In my opinion, you are at the apex in the woodworking magazine field. You do everything right . . . great projects, clear descriptions, exceptional artwork and photography, and excellent tips.

I've built so many of your projects and have received so many compliments on them that I just can't say enough in praise for your support of us woodworking enthusiasts. Once in a while, the construction process generates an idea worth sharing with others. Such was the case in building a couple of Jim Boelling's tabletop easels from the December 1989 issue. This is a really attractive piece, and Jim certainly deserves plaudits for his creative ability.

The one thing about it that made me think twice was the thin ⅛" hinge. If cut out of a piece of solid stock, the hinge becomes a structurally weak spot. The long rear leg provides a huge lever that if moved aside (perhaps by a curious child) would easily split the hinge in two . . . end of an easel.

My solution to the weak spot is to fabricate a hinge from ⅛"-thick walnut plywood. I cut five pieces of walnut veneer about 3×3" and laminated them together with wood glue while alternating the grain direction of each piece. The five thicknesses I used resulted in a finished thickness of precisely ⅛"—and virtually unbreakable.

—Norman Harrington, Manlius, N.Y.

Norm sent along a piece of lamination scrap that certainly is stronger than solid stock. Great suggestion for the hinge!

Credit check on spoon/thimble case

We incorrectly credited the spoon/thimble case design in our June 1990 issue. Arnold Davison of Colborne, Ontario, submitted the illustrations and how-to instruction for this great-looking project. Some readers have adapted the plans for other collections including sea shells.

Clearing the error on the dry sink

In the dry-sink project shown in the February 1990, we inadvertently published two different dimensions for the same drawer rabbet. You should cut ⅞" rabbets ½" deep for each drawer side.

Continued on page 12

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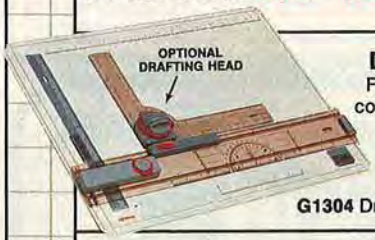

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TALKING BACK

Continued from page 11

Reader takes a closer look at router speed controllers

In response to the original question by John Calver in the December 1989 issue (can a speed controller damage a router?), both electronic speed reducers, such as the MLCS, and the reduction of line voltage can safely lower the operating speed of a router. The average no-load operating current and motor heating drops to nominally the same value in each case. There is, however, a considerable difference in cutting performance.

There's a misconception that reduced line voltage damages all AC motors. Although this is true of *induction motors,* such as the capacitor-start tablesaw motor, it is not true for the *series-wound universal AC/DC* motors used in routers and other small power tools. Not only can universal motors operate without overheating at line voltages reduced less than 10 percent, reducing the line voltage with a resistor or rheostat is an acceptable method of speed control in some applications. However, this is not a desirable method for routers since lowering the voltage also reduces the available torque at the lower speed.

Electronic speed controllers, on the other hand, have an electronic feedback mechanism that increases the torque available at the lower operating speeds. This feedback increases torque as the load is applied, keeping the speed more uniform with increased loads.

In the interest of demonstrating that routers are not damaged by operating at less than line voltage, I performed a number of tests on four routers: a Craftsman 315.25060, Ryobi R150, Porter-Cable 690, and Elu 3338. Using a rheostat, voltmeter, ammeter, and tachometer, the voltage was reduced to each router in 10-percent increments down to stall voltage. At each increment, the routers were run for 10 minutes to check for possible overheating. There was no noticeable change in case or armature temperatures from 120 volts down to, and including, the stall voltage. At the stall voltage, the routers were operated for 30 minutes. The armatures buzzed, but did not turn (i.e., zero-convection cooling). After 30 minutes, there was some warming of the armature. This warming was less, however, than observed when operating a router at normal cutting loads at full line voltage.

—Eugene Holladay, Audubon, Pa.

Gene, an electronic engineer with an aerospace firm, provided us with eight pages of analysis of motor operation and charts from his tests. Drop us a note if you'd like us to publish more information about electric motors—as related to woodworking.

Mils—one more time

In the October 1989 issue, Mr. Bingham added to the confusion [about DuPont double-matte Mylar] by injecting "circular mils." The term *mil* comes from the Latin prefix *milli,* meaning one-thousandth. It has been shortened in common usage to mil, meaning one one-thousandth of an inch in lineal measure.

"Circular mils" is a measure of area generally used to indicate sizes of large electrical cables. As a draftsman, I would consider "mil" unacceptable as a dimension on a drawing and would use inches, as an example, ".003 inches." To add to the confusion for woodworkers, the letter M (the Roman numeral for one thousand) designates one thousand board feet of lumber, e.g. $2000/M.

—David Robertson, Peterborough, Ontario

Are we a timber colony for the Orient?

With all due respect to Mary Wirth's comments in your February 1990 issue, Mrs. Wirth does not have the facts straight. A simple review of export statistics reveals the root of the problem. It is not the spotted owl, nor is it Greenpeace. It is the wholesale auction of our old-growth forests to the Japanese.

I'm a native Washingtonian and live a quarter mile from the Port of Olympia log-export facility. I'd be happy to give the Wirths a tour if they're ever out this way. Meanwhile, life goes on in the Great Pacific Northwest, timber colony of the Orient.

Eric Bailey, Olympia, Wash.

We expect the forest article in this issue will bring additional letters. We'll keep you posted.

Good stuff for stave-bowl turners

John Monaghan, a New Hampshire woodworker, puts in a fair amount of time at the computer, too. In fact, he has worked out the most helpful chart for stave construction we've ever seen. His formulas include stock thicknesses from ¼" to ¾", number of sides from 6 to 36, the outside width of each stave, the inside diameter of the container, and cut angles. For example, to build a six-sided planter from ½" stock, John knows his staves will be 2½" wide on the outside if he wants an inside diameter of 2.33". If you'd like a copy of this four-page chart, send $2 and a stamped, self-addressed business-sized envelope to: John Monaghan, 40 Hook Road, Candia, NH 03034. Foreign residents, please include an international reply coupon.

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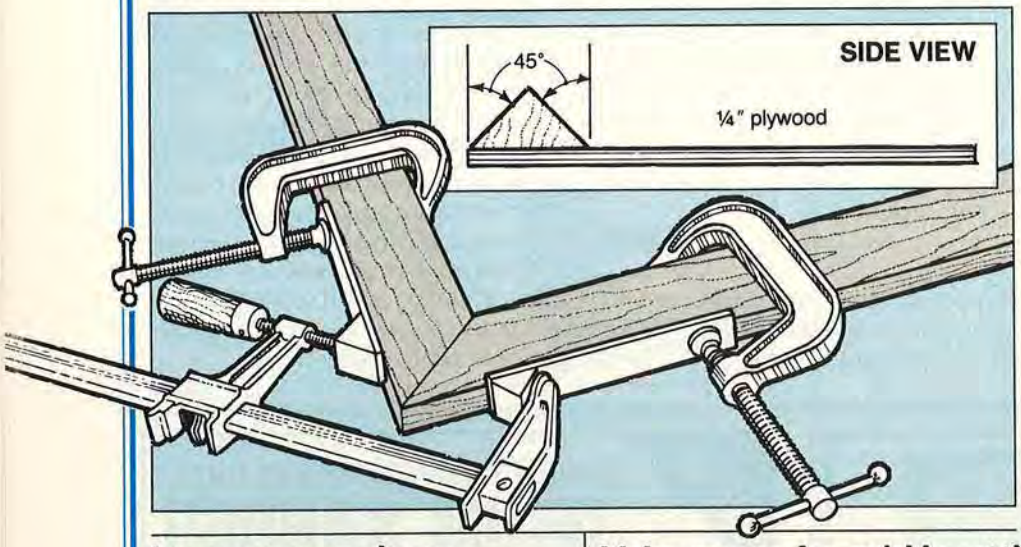
Beefy clamping jigs strengthen mitered corners

Many corner clamps fail to provide adequate pressure. As a result, the mitered joints are weak or have sloppy glue lines.

TIP: Construct one or more pairs of clamping jigs as shown, using 4–5" lengths of ¼" plywood ¾" wide. With your tablesaw miter gauge set to 45°, cut triangular blocks from ¾" stock. Glue the blocks to the plywood strips and, when dry, clamp frame corners as shown *below.*

—John Tanzini, Hamilton Square, N.J.

For his tip, John receives a Dremel 13" scrollsaw.



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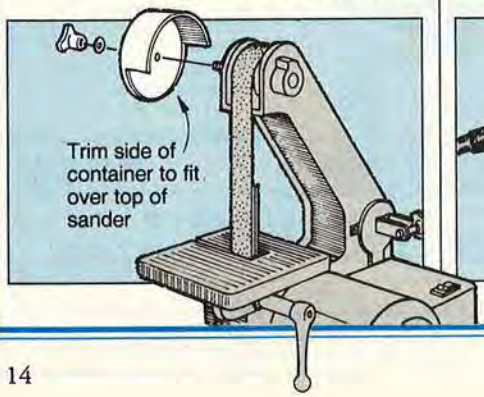
Low-cost cover keeps sawdust from flying

The exposed upper pulleys on some 1" belt sanders permit sanding inside curves. However, when using the lower portion of the belt, the top may shower you with fine sanding debris.

TIP: With scissors or snips, fashion a cover from a plastic margarine container for the top of the sander. Attach as shown *below.*

—Michael Weigandt, Rancho Cordova, Calif.



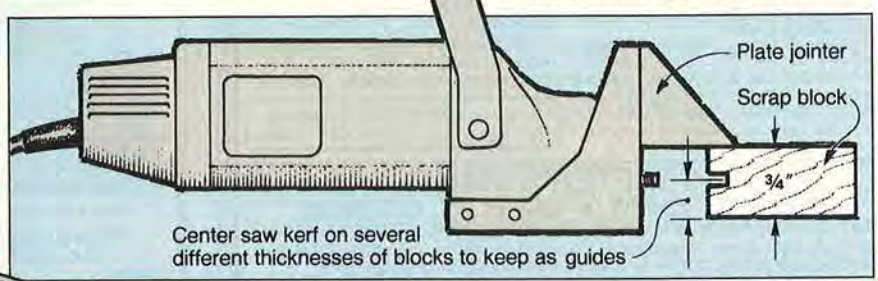
Make gauges for quickly setting your plate jointer

On many plate jointers, setting the fence height for various thicknesses of stock can be time-consuming work. It sure would be nice if you could quickly set the fence at predetermined heights. Another tricky task: keeping the fence parallel to the workpiece.

TIP: Solve both problems by making a set of gauges from scrap. To start, place your plate jointer on a flat table so its base rests flush with the surface. Use a piece of material of the desired thickness and set the fence for a centered cut. For 1½"-and-thicker stock, it makes sense to center two slots. Mark the blocks for material thickness and number of biscuits.

To set the fence, place the jointer on a table, loosen and lift the fence, place the correct block under it, and tighten the fence locking screws while holding it against the block.

—Bob Hockenberry, Rochester, Minn.



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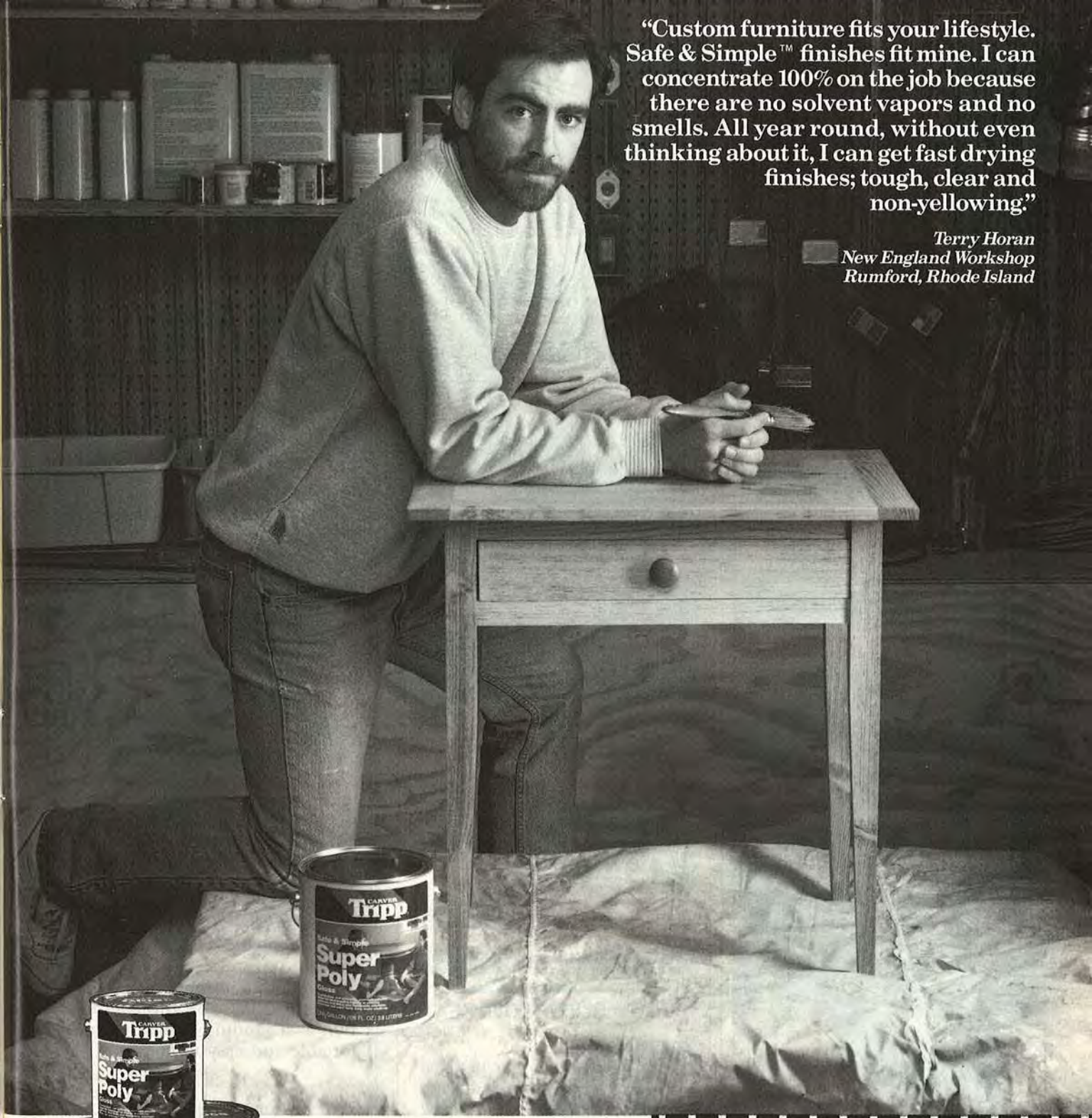
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TIPS FROM YOUR SHOP (AND OURS)

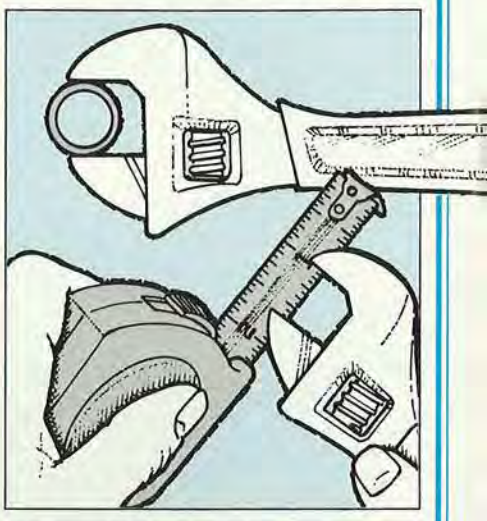
Continued from page 14

'Wrenching' solution for misplaced calipers

Suppose you have to determine the diameter of a piece of pipe or dowel, but calipers aren't to be found in your shop. How can you take the measurement?

TIP: Slip an adjustable wrench over the piece, tighten snugly, and then use a tape measure to determine the jaw opening.

—From the WOOD magazine shop

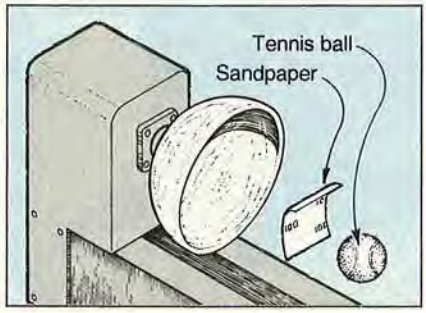


Tennis ball lobs time off sanding bowls

Sanding the inside of a turned bowl can be a tricky task. Holding sandpaper with your fingers works, but the paper soon gets hot and your hands quickly tire.

TIP: Wrap sandpaper around a tennis ball and use the combination as a sanding block. It's comfortable and easy to control.

—John T. Schulte, Temecula, Calif.



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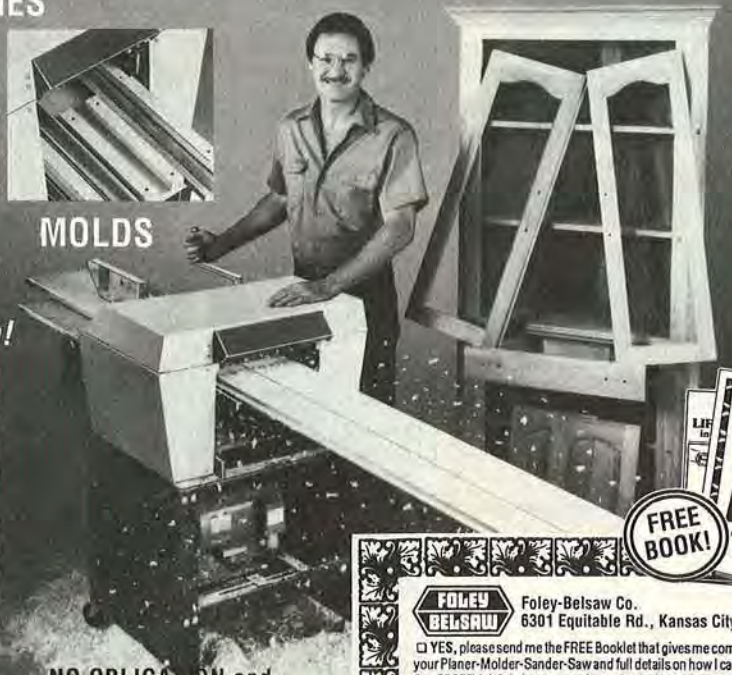

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TIPS FROM YOUR SHOP (AND OURS)

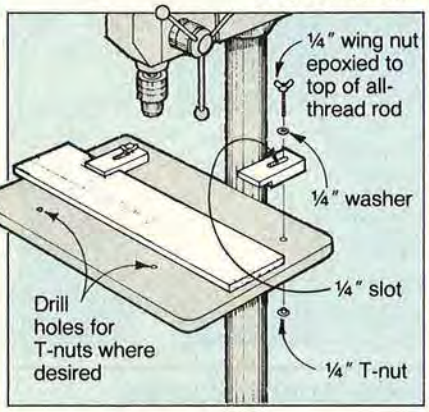
Continued from page 16

Make these inexpensive, handy hold-downs

When using a drill press, it's crucial to prevent the stock from slipping around, especially as you start the bit into the wood. C-clamps work nicely on longer pieces, but require some setup.

TIP: From ¾" plywood or solid stock, make a few hold-downs as shown *below*. Epoxy wing nuts to lengths of ¼" threaded rod and use ¼" T-nuts on the underside of the table for anchors. These hold-downs also work on other surfaces such as your workbench.

—Richard S. Mickley, Marysville, Ohio



Sandwich bag locks out shop dust and moisture

A pocket calculator comes in handy in a shop, and some woodworkers rely on one constantly. However, wood dust, moisture, and liquid spills can play havoc with a calculator's delicate workings.

TIP: Place the calculator inside a clear, resealable sandwich bag and keep it there. You can still easily operate the calculator and read its results, without worrying about damage from dust or fluids.

—R. C. Proffitt, Oak Harbor, Wash.

Continued on page 20

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C1454	7/32"	3/4"	2"	$19
C1443	1/4"	7/8"	2"	$15

1/2" SHANK

Part No.	DIA.	C.L.	O.L.	PRICE
C1446	3/8"	1"	3"	$30
C1447	1/2"	1 1/2"	3"	$30

Due to the nature of Solid Carbide, these bits are not warranteed against breakage.

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Straight — Single Flute

1/4" SHANK

Part No.	DIA.	C.L.	O.L.	PRICE
NEW C1471	1/8"	3/8"	1 3/4"	$12
NEW C1472	5/32"	3/8"	1 3/4"	$12
NEW C1473	3/16"	3/8"	1 3/4"	$12

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If you haven't used Solid Carbide then you're missing out.

Solid Carbide Tip

Solid Carbide Straight — 2 Flutes

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NEW C1450	1/8"	3/8"	2"	$15
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TIPS FROM YOUR SHOP (AND OURS)

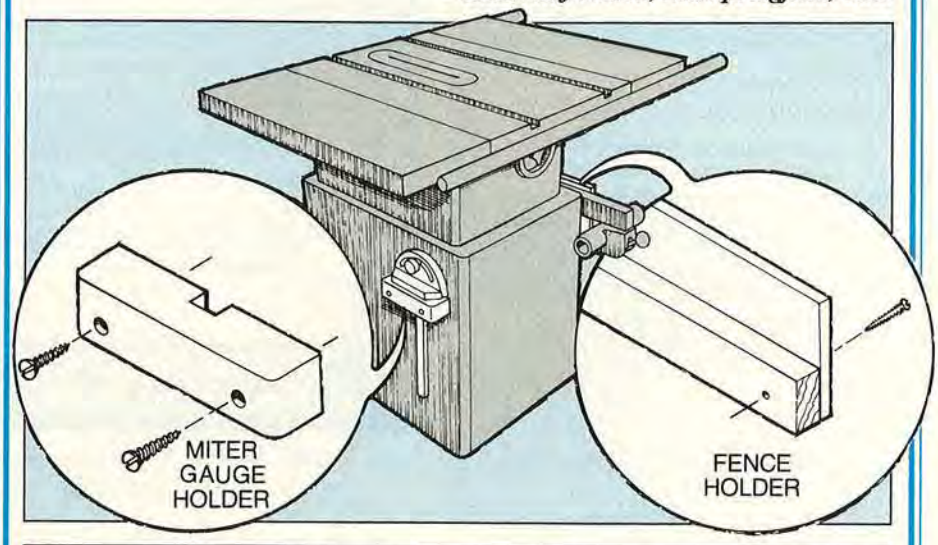
Continued from page 19

PROTECT SAW ACCESSORIES FROM DAMAGING FALLS

The miter gauge and rip fence on a tablesaw are delicate instruments designed specifically for assuring precise cuts. When cutting large pieces, you often have to remove one of these accessories. Unfortunately, both of them often find a home on the edge of a table from where they may fall to the floor, knocking them out of adjustment and jeopardizing your toes.

TIP: Install wooden holders for both the miter gauge and rip fence on the saw's stand. To make the miter gauge holder, simply cut a channel into a block to receive the bar on the gauge. For a retainer for the rip fence, add a side cleat of plywood to a length of wood slightly thicker than the fence and as long as the depth of the saw's base as illustrated *below.*

—David M. Johnson, New Springfield, Ohio

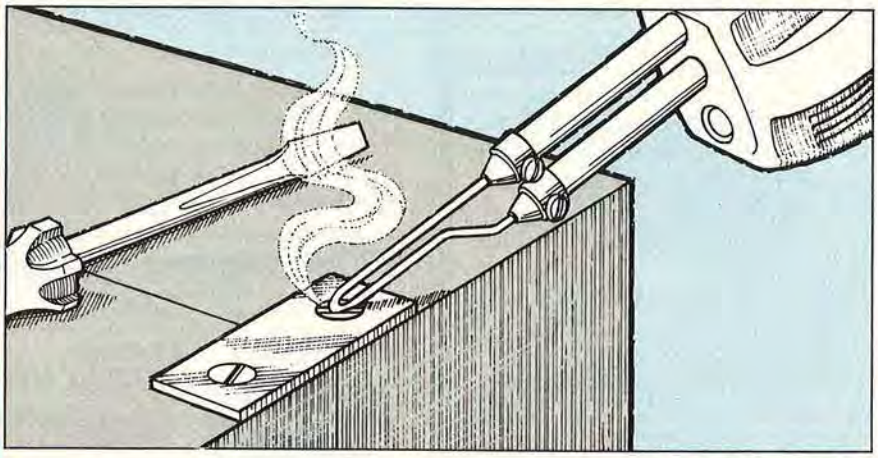


A LITTLE HEAT LOOSENS STUBBORN RUSTY SCREWS

Badly rusted woodscrews are tough to remove from old furniture, boats, or any other wooden product. Using brute force often accomplishes little other than roughening up the screw slot and marring the surrounding wood surface.

TIP: Heat the head of the screw with a hot soldering iron for a few minutes. That should loosen the fastener enough so you can remove it easily. This method also helps you remove screws held in place with epoxies and other adhesives.

—Michael A. Yahn, Jamestown, N.Y.



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TIPS FROM YOUR SHOP (AND OURS)

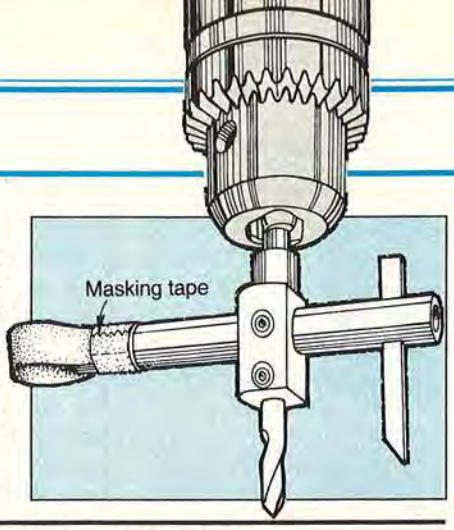
Continued from page 20

EARLY WARNING SYSTEM FOR CIRCLE CUTTERS

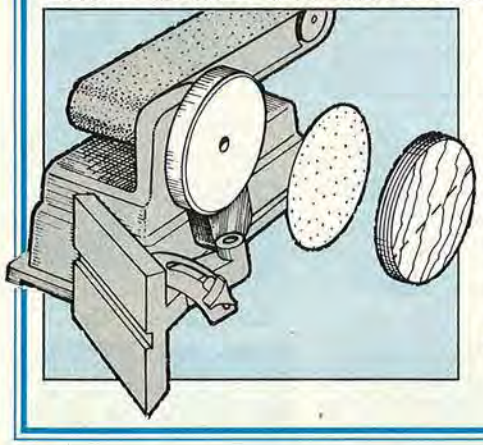
The swinging arm of a circle cutter is hard to see and can inflict serious injuries to fingers and hands.

TIP: Applying a bright-colored paint to the ends of the arm makes it more visible and somewhat less hazardous. But for an added margin of safety, attach a loop of masking tape that extends an inch or two from the end of the arm. If your hand wanders into the path of this loop, it will smack you as a warning that you are getting too close. Also, remember to operate your circle cutter no faster than 500 rpm.

—Bud Borneman, North Ridgeville, Ohio



CLAMP BOARD ENSURES A SANDPAPER BOND THAT KEEPS ON HOLDING ON



Self-adhesive sanding discs and those that require spray-on adhesive can come loose or buckle *after little use. For most adhesives, it helps to hold the sanding disc firmly in place against the sanding plate for a day or so as the glue sets.*

TIP: Cut a circular piece of ¾" plywood the same size as the sanding disc. After applying the sandpaper, clamp the plywood to the mounting plate to press the sandpaper securely in place. Leave the plywood disc attached for at least a day to ensure a solid grip. If you can't remove the sanding table, or a dust chute obstructs the bottom half of the disc, cut the clamp board in half. Then, apply the board to the top half of the disc for one day, remove the board, rotate the disc 180°, and apply the plywood to the other half of the disc.

—Philip Cole, Ware, Mass.

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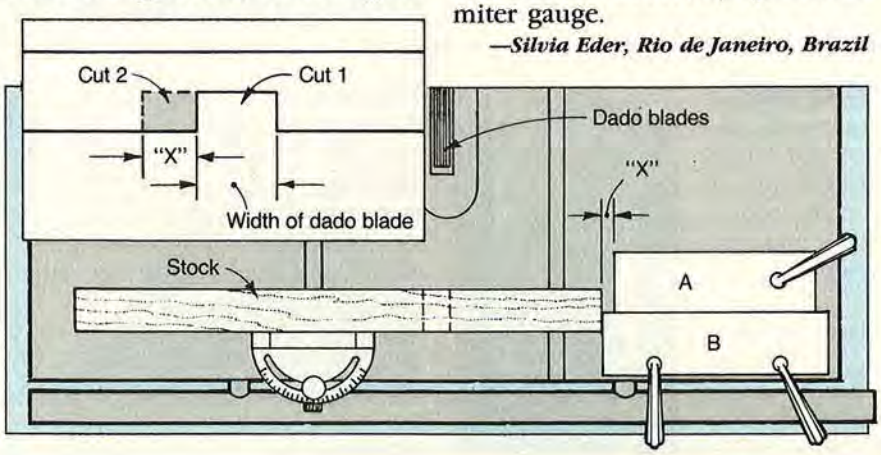
Stop blocks assure consistent dado cuts

Making identical dado cuts in a series of pieces can be really tricky, particularly when the cut happens to be wider than the widest setting for your dado blade.

TIP: Measure carefully and clamp two separate blocks (A and B in the drawing *below*) to the top of your tablesaw to establish the right- and left-hand limits of the dado. Position the stock against stop block A, make the cut, and do likewise after aligning the stock with block B. Use scrap stock to check settings before cutting the actual workpieces, and hold the stock securely against the miter gauge.

—Silvia Eder, Rio de Janeiro, Brazil



More tips from our woodworking pros

- Have you always wanted to know how to cut tapered legs? If so, check our tried-and-true method on page 36.
- To save time when assembling drawers, try the tape-and-glue procedure on page 37.
- If you would like an introduction to relief carving that's easy as can be, try the heart pattern on page 38.
- Clamping irregular-shaped parts can be a real challenge. We offer two solutions in projects on pages 41 and 78.
- On page 42 you'll find a simple jig for holding workpieces upright on a tablesaw as you cut kerfs into their ends.
- Aging a clock face by 100 years takes less time than you may think. See page 45.

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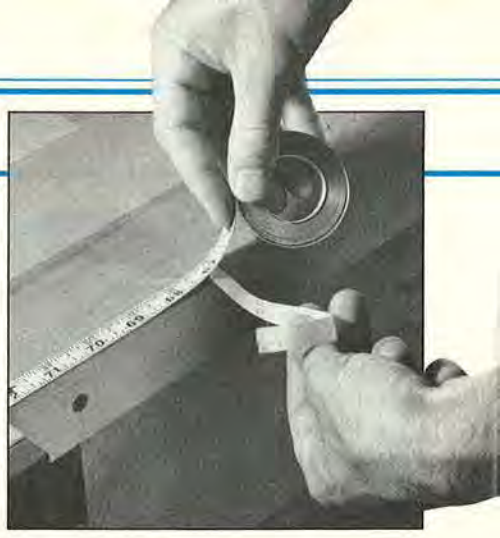
Stick a tape measure wherever you need it

Many times, it's faster to bring a workpiece to a rolled-out tape measure than to pull a tape measure from your pocket, unwind it, and then make a reading. With that in mind, Stanley Tools developed Stick-A-Tape adhesive-backed steel measuring blades.

I placed the tape along the chipped and paint-coated edge of an old workbench and it has stayed firmly in position for the past few months. I placed leftover sections in other spots around my shop.

—Tested by Steve Oswalt

Stanley Stick-A-Tape, available in 8' and 12' lengths at stores nationwide. Suggested retail price for both lengths: $6.28.



A woodenware finish you'll go nuts over

I've made more than my share of cutting boards, salad bowls, and other woodenwares, so I'm always on the lookout for a better nontoxic finish. Recently, I tried Preserve, a digestibly safe finish made from a blend of nut oils. The clear liquid built a thin surface finish, and dried in 24 hours. I suggest you coat your workpiece two or three times.

—Tested by Marlen Kemmet

Master Blend Preserve finish, $12.45 ppd. for an 8-oz. bottle from Meisel Hardware Specialties, P.O. Box 70W-12, Mound, MN 55364-0070.

No mix-up epoxy

I've poured about 45 gallons of various epoxies into a 30-foot sailboat I'm building and believe me, there's no beating five-minute epoxies for fast, tough, gap-filling bonds. The only catch: You have to thoroughly mix the resin and hardener in the correct proportion (usually 1:1). If not blended properly, the epoxy remains tacky for a long time, and never develops full strength. However, Devcon's five-minute epoxy gel makes mixing a foolproof process, thanks to two product features. First, the syringe-type applicator helps you squeeze out the hardener and resin in equal proportions as shown at *left*. Next, a feature I haven't seen in any other five-minute epoxy: The two components tell you when they are properly mixed by turning from a light blue to white color.

—Tested by Jim Downing

Devcon five-minute epoxy gel, about $3 for a 1-oz. dual syringe at hardware stores nationwide.

High-speed carving

If you're looking for a fast, safe, and controllable way to remove large amounts of stock from free-form carving projects, then you'll find the Woodcarver a must-have tool. The six-toothed, hardened steel, Australian-made tool mounts to any 4" or 4½" grinder. Although I must admit that the Woodcarver initially scared me, a few test cuts changed my mind completely. The tool cut amazingly fast in any direction, in hard and soft wood, without a hint of grabbing the wood or kickback. It didn't burn the wood at all and produced little tearout, even on end grain. Because of the noise generated by the grinder, and the copious amount of chips produced, eye and ear protection are required.

—Tested by Bill Krier

Woodcarver, $52.95 ppd. from FEC International, 2711 Blairstone Lane, Tallahassee, FL 32301. Call 800-942-1300.

Hooray for this hotmelt gun

With so many hotmelt glue guns on the market, few of them stand out from the pack. The Arrow hotmelt gun does, largely because of its stable stand and drip pan that helps you avoid a sticky mess. I liked its smooth and positive trigger feed. And when you use a hotmelt gun as much as I do, it's the little things that really add up. For my money, a hotmelt gun can never heat up too fast, and this one comes up to operating temperaure faster than any other I've ever tried. Glue sticks come in 4" and 10" lengths with caulking and weatherstripping sticks also available.

—Tested by Jim Boelling

Arrow hotmelt glue gun model TR-550, about $26 at hardware and home-center stores nationwide.

Put the clamp on irregular objects

This product consists of two parts: nonmarring, leather-padded blocks that fit your 9"- or 11"-wide vise and pivoting jaws that sit atop the padded blocks. The latter allow you to lock onto irregular-shaped workpieces with ease—something that's not possible otherwise. Thanks to clear instructions, installation was relatively easy. The product appears well-built and should last the lifetime of your vise.

—Tested by Larry Clayton

Vise blocks and pivoting jaws, no. 06M06 for the 9" size, $39.95 ppd.; no. 06N09 for the 11" size, $42.50 ppd.; from Woodcraft, 210 Wood County Industrial Park, P.O. Box 1686, Parkersburg, WV 26102.

Continued on page 26

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PRODUCTS THAT PERFORM

Continued from page 25

Finally! a solution to pegboard fallout

After years of seeing my pegboard hooks fall to the floor, I welcomed the opportunity to try out a product that promised a solution. M-Clips, a plastic fastener for pegboard hooks, kept its promise. After a quick-and-easy installation, M-Clips tenaciously held my hooks in place, giving me more time to get my work done. However, carefully plan the position of your hooks because once the M-Clips are in place, you will have a difficult time removing them.

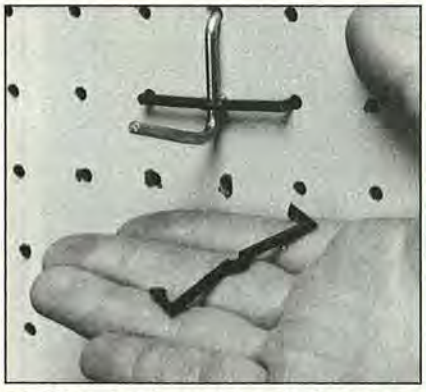
—Tested by Steve Oswalt

Dustblocker shop apron, $25.45 ppd. from Woodworker's Supply of New Mexico, 5604 Alameda Place, NE, Albuquerque, NM 87113.

These pulleys reduce tablesaw vibration

Vibration in a tablesaw can lead to all sorts of problems, including inaccurate cuts and blade marks. One source of vibration: the standard, cast-metal pulleys on most tablesaws. A set of turned metal pulleys from Inline Industries went a long way toward reducing vibration in my Delta contractor's saw. Currently, you can purchase the pulleys for ½", ⅝", and ¾" motor and blade arbors. Specify the make and model of your saw when ordering.

—Tested by Jim Downing



M-Clips pegboard hook fasteners, $6.99 ppd. for 50 clips from Aetech Corp., P.O. Box 6298, Lawrenceville, NJ 08648.

Apron stops dusty pain in the neck

Because I'm an avid woodturner, I jumped at the chance to test any product that would stem the inevitable tide of chips that fall down the inside of my shirt as I work at the lathe. The Dustblocker shop apron did the trick. How? Unlike other shop aprons, this model has a turtleneck that forms a chip-tight barrier around your neck. The collar fits up to a size 18 neck.

The smock's durable, urethane-coated nylon material resists liquids and dusts off easily. Although I keep the apron next to my lathe, I also found the garment suitable for sawing and routing.

—Tested by C. L. Gatzke

Turned metal pulleys, $17.50 ppd. per pair from Inline Industries, 661 S. Main St., Webster, MA 01570. To order, call 800-533-6709 (508/949-2968 in MA).

Continued on page 28

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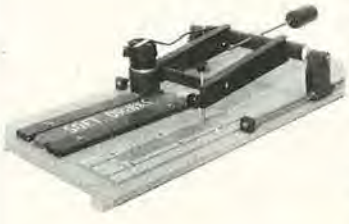

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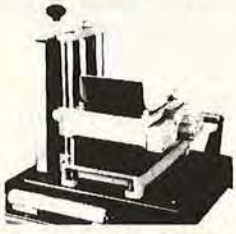

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PRODUCTS THAT PERFORM

Continued from page 27

Air filter gives your lungs a dust break

Even the most elaborate dust collection systems won't capture the barely-visible, super-fine dust that spews from most woodworking machinery. Now, Tech Paper offers a helping hand: the Mobile "K" air filtration unit.

This stand-alone machine consists of a window fan inside a metal enclosure on casters. That sounds awfully simple, but a sophisticated paper filter helps this unit capture particles as small as 0.3 microns in size. The manufacturer says you'll get 65 filter changes from the 18"×130' paper roll. We ran the filter continuously for three weeks in the *WOOD*® magazine shop before it needed a change. Tech Paper tells us one unit will adequately handle the needs of a 20'×30' shop.

—Tested by Jim Boelling

Mobile "K" filter, $296.50 (with one roll of filter paper) plus shipping, from Tech Paper, Inc., 64 Euclid Ave., Pittsfield, MA 01201. Replacement filters cost $47.50. Write or call the company at 413/499-3351 for shipping costs.

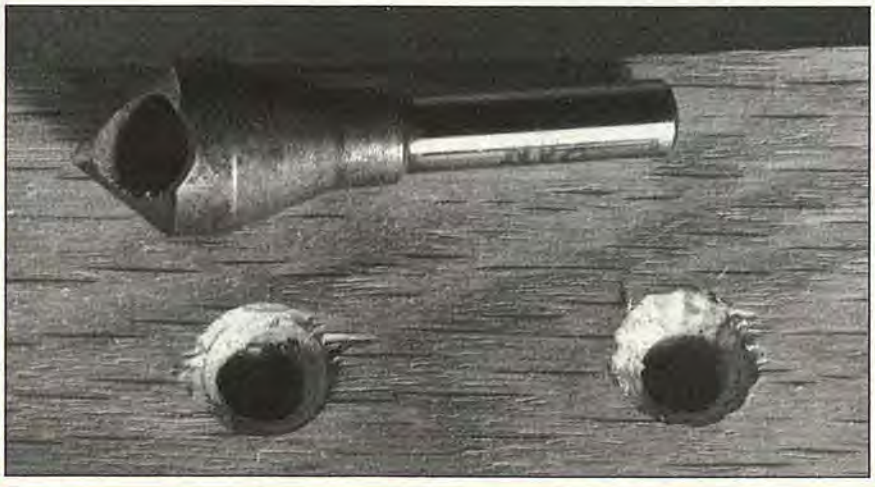
The best countersink bits I've ever seen

I've never liked the rough, faceted marks left along the walls of my countersunk holes by traditional fluted countersink bits. When I heard that Garrett Wade had a countersink bit that *shears* the wood fibers, rather than *scraping* them like 2- and 5-fluted bits, I just had to try them out. I wasn't disappointed. The bits cut exceptionally smooth, even without a predrilled hole. The no. 2 bit shown *below* cut the smooth hole on the left side of the oak-veneered, plywood. I cut the rougher hole on the right with a 5-fluted countersink bit.

The no. 0 bit will countersink holes from 1/16" to 15/64", the no. 1 from 5/32" to 13/32", and the no. 2 from 3/16" to 17/32". Shanks are 1/4".

—Tested by Jim Boelling

Countersink bits, $14.25–$17.40 each plus postage from Garrett Wade. Call 212/807-1155 or 800-221-2942 (orders only).



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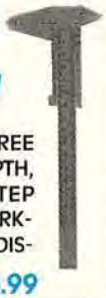

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	ST216	5/8	1	1/4	5.90
	ST219	3/4	1	1/4	8.50
	ST425	1	1 3/16	1/2	8.80
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	FT213	1/2	1	1/4	6.50
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	DV413	1/2	1/2	1/2	4.60
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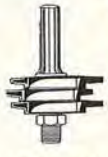

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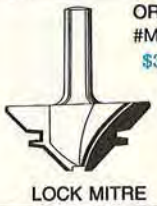

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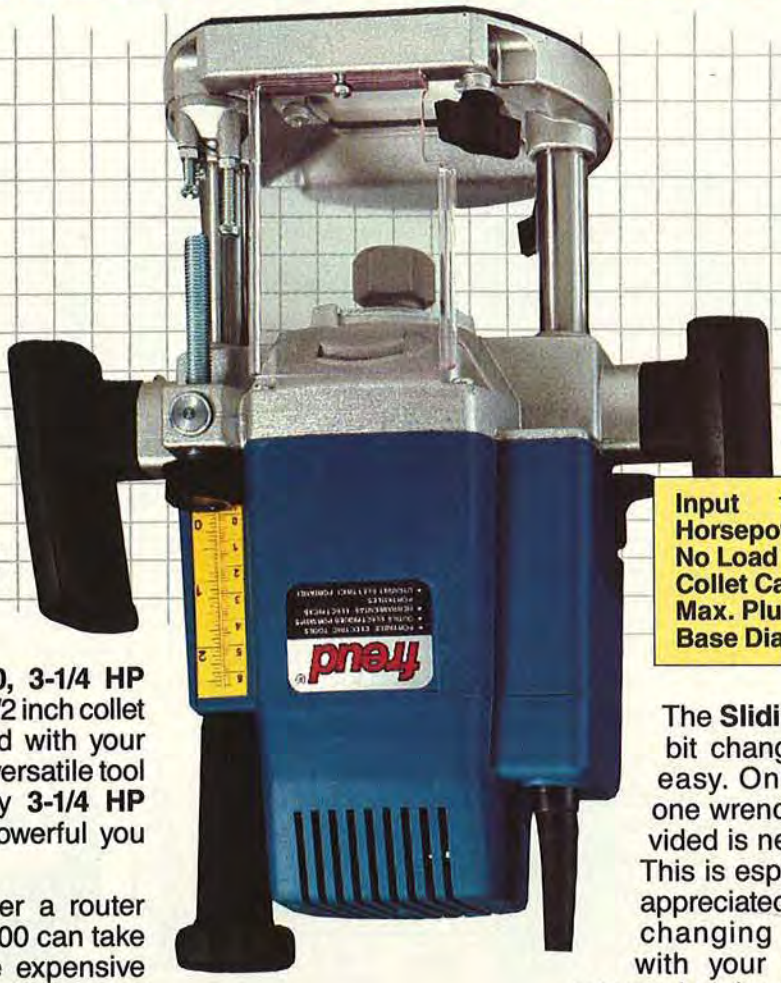

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Safety was an important factor when the on-off switch and the plunge lock were designed! Both were created with a downward stroke to disengage each feature. The on-off switch is controlled by the left hand and the plunge lock is controlled by the right hand.

A 1/4 inch collet reducer and collet wrench are standard with this powerful machine. Optional accessories include micro-adjustment parallel fence and set of template guides. To get your hands on the FT2000, 3-1/4 HP Plunge Router call us for the name of your local Freud distributor!

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SUGAR MAPLE

Hard as a rock, but how sweet it is!

Acer, part of the maple family's Latin, scientific name, means hard or sharp. And to the Romans, the wood was just that. From it, they made lance and pike shafts for battle. It was furniture, though, that bestowed the term "rock hard" on this traditional stock.

As the story goes, a colonial American cabinetmaker by the name of Rock promoted his work as "Rock's Hard Maple Furniture." That's why to this day many people refer to sugar maple as rock or rock-hard maple.

Sugar maple, although tough as its reputation, has a sweeter side. The other half of its genus name—*saccharum*—refers to its sap, a source of syrup and sugar.

Wood identification

Practically all states east of the Great Plains boast sugar maple (*Acer saccharum*), that in a forest setting, grows 70–130′ tall with a diameter of 2–3′. Open-grown trees have shorter trunks with a rounded crown of many branches. All sugar maples when young have a smooth silvery bark that with age turns ash-gray and breaks into unevenly layered flakes or scales.

Sugar maple has palm-sized leaves with five pointed lobes that in the fall call forth brilliant shades of red and orange. In early summer, double-winged keys—

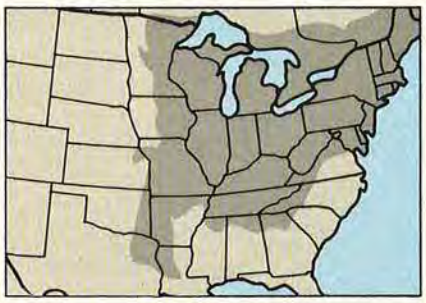
the tree's inedible fruit—emerge.

Straight-grained, fine-textured, hard, strong, and at 44 pounds per cubic foot as heavy as red oak, the wood of sugar maple has high commercial value. Its sapwood, frequently 3–5″ thick, appears much lighter in color than the slightly pinkish-tan heartwood. Both are sold.

Some trees produce spectacularly figured wood in curly, fiddleback, quilt, and bird's-eye.

Uses in woodworking

Known for its toughness and durability, sugar maple takes a pounding as bowling-lane surfaces, bowling pins, school



Natural Range

desks, tool handles, and ladder rungs. On a gentler side, it's sugar maple that becomes much of the furniture we call "Early American." The wood also shows up as cabinets, countertops, cutting boards, butcher block, and flooring.

Turners find figured sugar maple, particularly burls and intricately colored spalted stock, appealing for bowls. Fiddleback sugar maple has always been popular for the backs of stringed instruments, such as violins.

Availability

Sugar maple, sold all across the continent, often comes in board lengths of 12′ and widths to 10″. Large dealers may also offer figured wood as well as plain lumber. And, furniture squares, hardwood plywood, and figured veneers are easily obtained.

In abundant supply, sugar maple lumber sells for about $1.50 per board foot (slightly more for figured stock). Veneer, from plain to exquisitely figured, costs from 50 cents to $1 per square foot.

Continued

PERFORMANCE PROFILE

sugar maple

(*Acer saccharum*)

Straight-grained sugar maple

Bird's-eye sugar maple

Machining methods

Sugar maple isn't dubbed "hard maple" without reason. It dulls cutting edges, yet it chips. And, sugar maple burns more easily from cutting and machining than any other wood. *Here's how to overcome this wood's pesky traits:*

- Feed densely figured wood, such as bird's-eye, very slowly into the planer, and never plane it exactly to thickness. Leave some for sanding. Otherwise, the grain tears out in pocks. For hand-planing, set the iron at a 15°–20° angle.
- Dense, close-grained sugar maple demands a rip-profile blade with *no more than 28 teeth*. Sawdust won't accumulate, causing friction that heats the blade to burn the wood. If tearout occurs, allow for a 1/32" jointing pass to clean the edge.
- Crosscut figured wood with help from a backing board.
- Drill sugar maple at about 250 rpm, and back the bit out to clear chips. A stubby, spurred brad-point bit won't burn the wood as easily as one with long spurs. Burning glazes the wood.
- Avoid burning by routing only with bits that have ballbearing pilots. With speed control, rout slowly. Use a consistent feed rate.
- Lubricate screws.
- Sugar maple doesn't absorb glue immediately, sometimes resulting in joint slippage from excess glue. If this happens, switch to a glue with longer open time (such as a white glue) and put down a lighter coat. Briefly join the pieces, then pull them apart and let the glue set up before reassembling. Note: Solid joinery usually requires a machined joint.
- Don't oversand sugar maple with extremely fine paper, such as 400- or 600-grit. Excessive sanding burnishes the wood so that it won't readily accept stain. Avoid cross-grain sanding. Better yet, use a cabinet scraper.
- For even staining on sugar maple, first apply a wood conditioner, or use aniline dyes. Tinting the topcoat works, too.

Carving comments

- Sugar maple discourages the most accomplished carvers, but it does take very fine detail. *Here's how to handle it:*
- Even a shallow gouge bevel of 15°–20° erodes fast in this wood. To add edge longevity, grind a slight (10°) bevel on the *backside* of the gouge tip.
- Power carvers should start with medium-cut burrs, then follow with finer ones. Coarse-cutting burrs chip the wood.

Turning tips

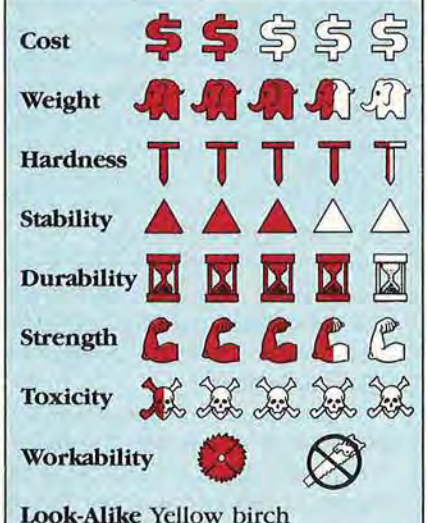
- Sugar maple turns like a dream, even for beginners, and requires little or no sanding when sheared with sharp tools. *Here's two tips to avoid burning:*
- Don't let the turning tool's bevel ride in one spot very long.
- When sanding on the lathe, watch for abrasives wearing off. Bare sandpaper running against the wood will burn it, too.

SHOP-TESTED TECHNIQUES THAT ALWAYS WORK

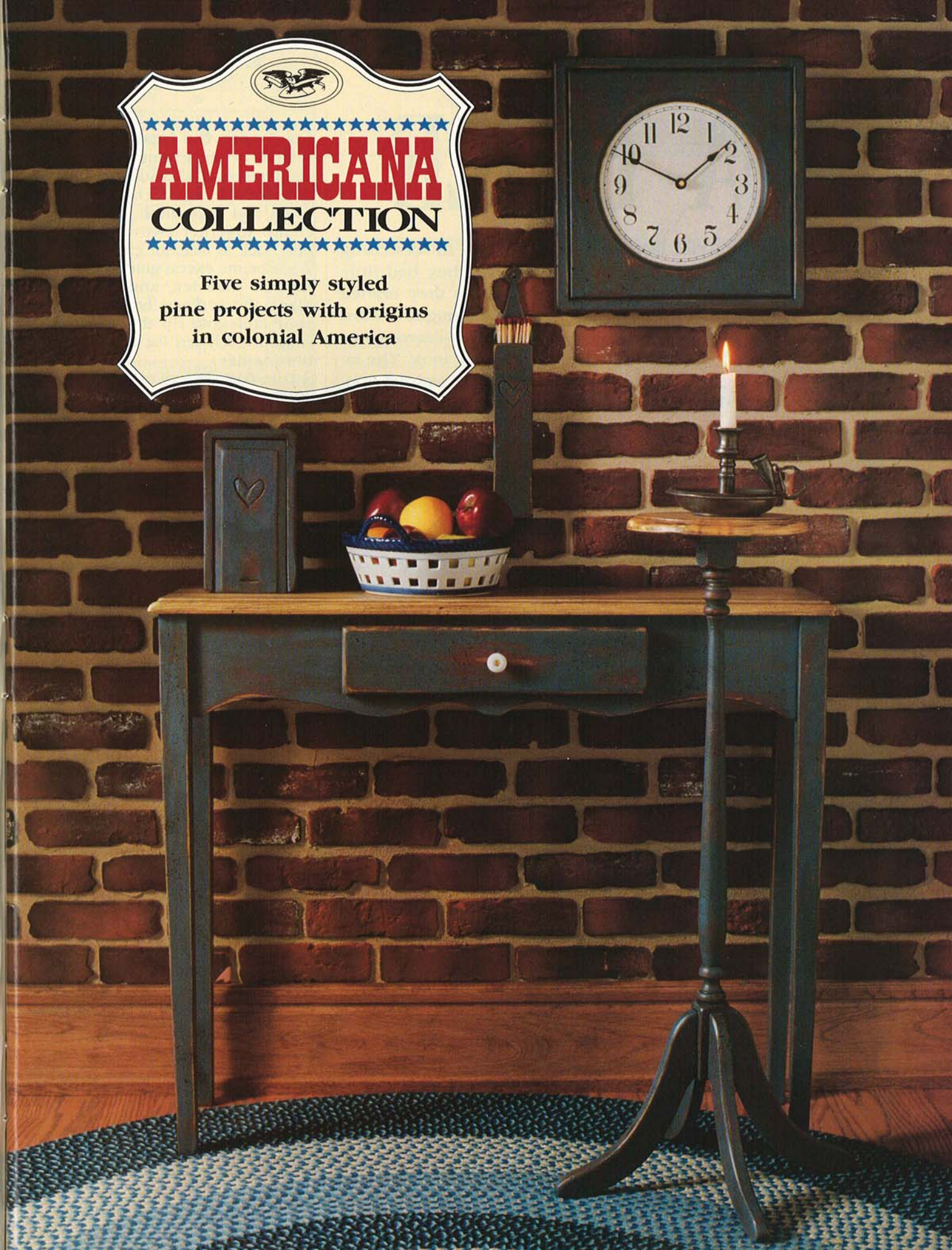
Any exceptions, and special tips pertaining to this issue's featured wood species, appear under headings elsewhere on this page.

- For stability in use, always work wood with a maximum moisture content of 8 percent.
- Feed straight-grained wood into planer knives at a 90° angle. To avoid tearing, feed wood with figured or twisted grain at a slight angle (about 15°), and take shallow cuts of about 1/32".
- For clean cuts, rip with a rip-profile blade with 24–32 teeth. Smooth crosscutting requires about a 40-tooth blade.
- Avoid drilling with twist drills. They tend to wander and cause breakout. Use a backing board under the workpiece.
- Drill pilot holes for screws.
- Rout with sharp, preferably carbide-tipped, bits and take shallow passes to avoid burning.
- Carving hardwoods generally means shallow gouge bevels—15° to 20°—and shallow cuts.

SUGAR MAPLE AT A GLANCE



Compiled with woodworkers Jim Boelling, Paul McClure, Don Wipperman, woodcarver Phil Odden, turner Rick Reeves Illustrations: Steve Schindler


AMERICANA
COLLECTION
Five simply styled
pine projects with origins
in colonial America

EARLY-DAYS SOFA TABLE

New arrivals to America faced an enormous task in scratching out an existence in the colonies. And because they had little time or need for elaborate furniture, the pieces they crafted reflected a practical, down-home lifestyle. That straightforward design approach—as shown in the table below—draws raves even today from families who enjoy the country look. The table, with its single drawer, painted base, and stained top, works well behind a sofa or in a hallway.

Print this article

Start with the tapered legs

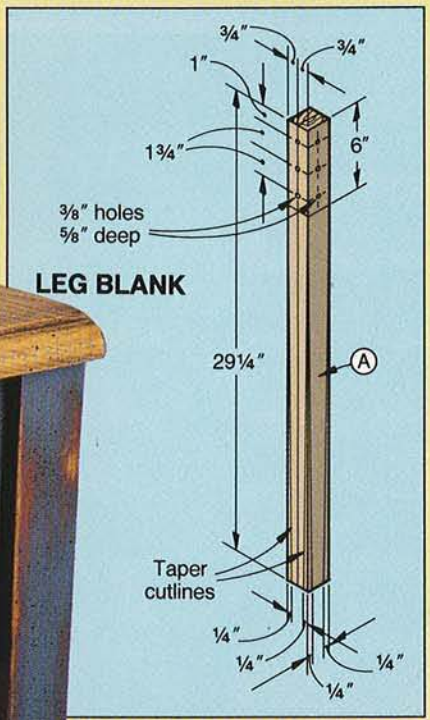
1 From ¾"-thick pine stock, cut eight pieces 1⅝" wide by 30¼" long for the legs (A). With the edges and ends flush, glue and clamp together two pieces of pine, face to face, for each leg.

2 Scrape the excess glue from *one edge* of *each* leg, and joint or plane the scraped edge. Using your tablesaw, rip the *opposite* edge of each leg for a 1½" finished width.

3 Trim *both ends* of each leg for a 29¼" finished length.

4 Mark the centerpoints and drill ⅜" holes ⅝" deep on two adjoining sides of each leg where located on the Leg Blank Drawing *below*. (We used a doweling jig when drilling the dowel holes.)

5 Using the Leg Blank Drawing *below* for reference, locate and mark the cutlines on all four surfaces of one leg.



6 Following the steps on the drawing on page 36, taper-cut each leg to shape. See our plans in the August 1987 issue of *WOOD*® magazine if you don't have a taper jig.

Continued

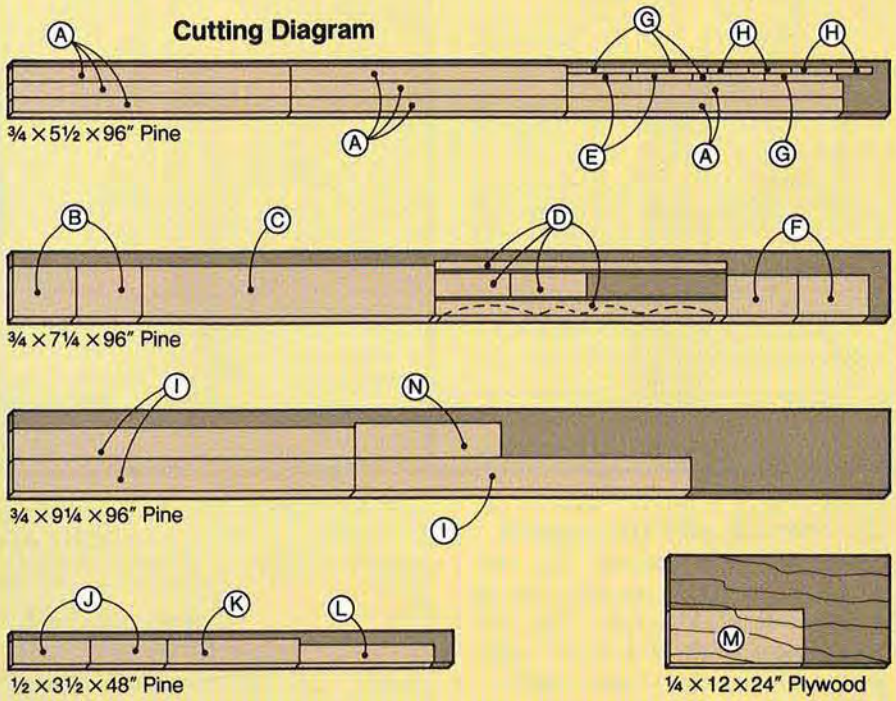
Bill of Materials

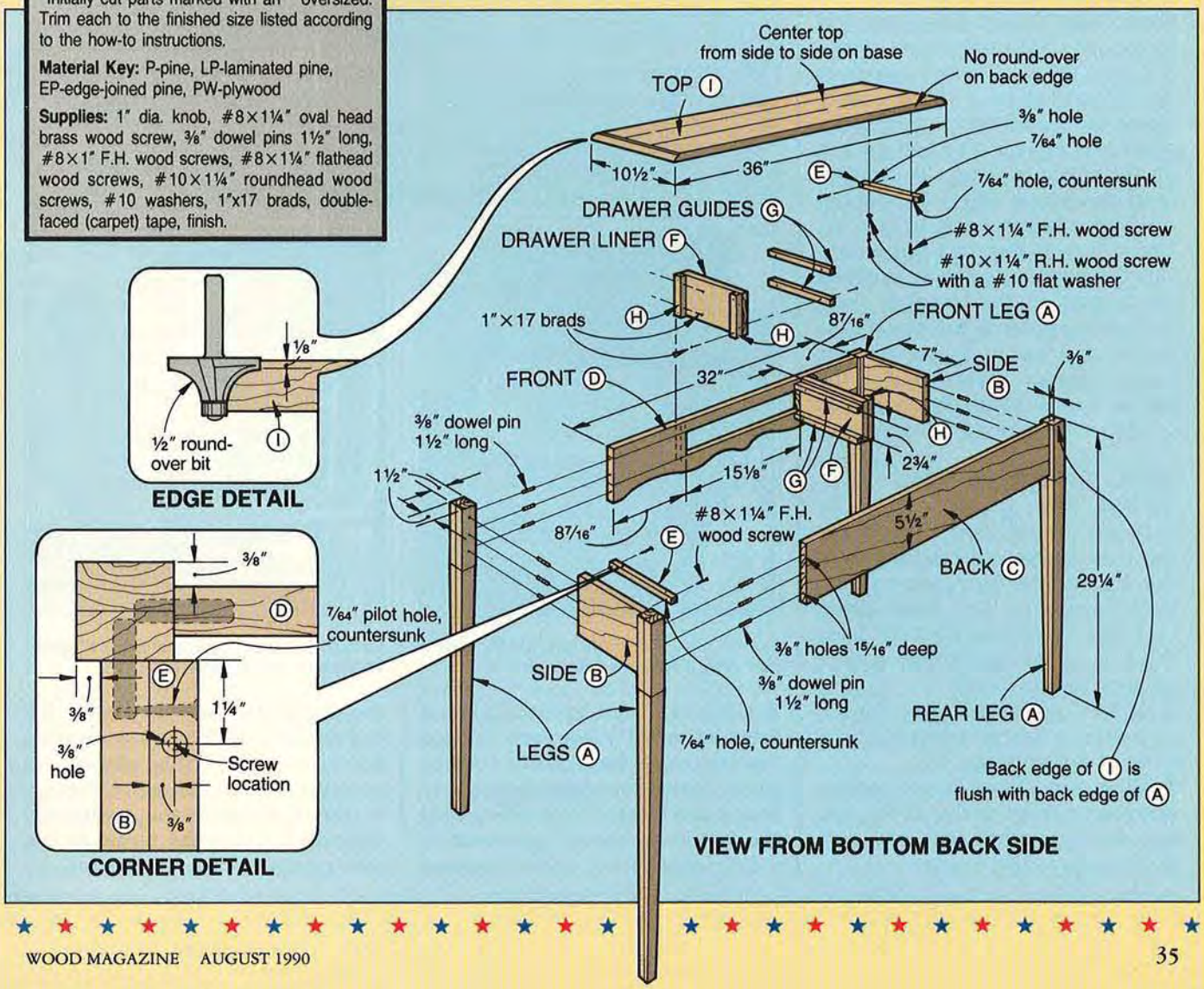
Part	Finished Size* T	W	L	Matl.	Qty.
TABLE					
A* legs	1½"	1½"	29¼"	LP	4
B sides	¾"	5½"	7"	P	2
C back	¾"	5½"	32"	P	1
D front	¾"	5½"	32"	EP	1
E cleats	¾"	¾"	6⅞"	P	2
F drawer liners	¾"	4½"	7¾"	P	2
G guides	¾"	¾"	7¾"	P	4
H cleats	¾"	¾"	4½"	P	4
I* top	¾"	10½"	36"	EP	1
DRAWER					
J sides	½"	2⅝"	8⅜"	P	2
K front	½"	2⅝"	14½"	P	1
L back	½"	2"	14½"	P	1
M bottom	¼"	6⅛"	14½"	PW	1
N face	¾"	3⅝"	16"	P	1

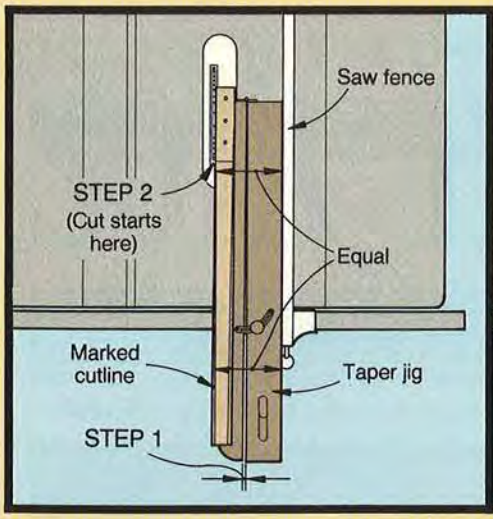
*Initially cut parts marked with an * oversized. Trim each to the finished size listed according to the how-to instructions.

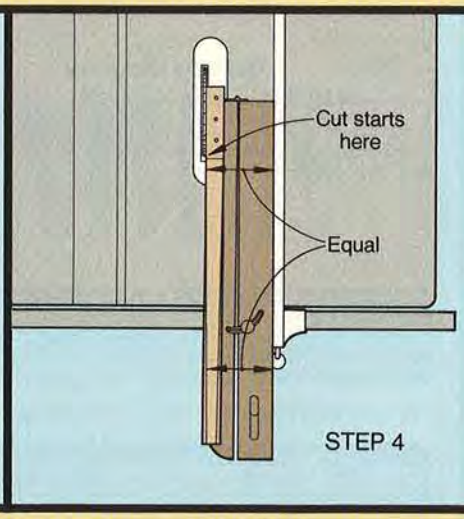
Material Key: P-pine, LP-laminated pine, EP-edge-joined pine, PW-plywood

Supplies: 1" dia. knob, #8×1¼" oval head brass wood screw, ⅜" dowel pins 1½" long, #8×1" F.H. wood screws, #8×1¼" flathead wood screws, #10×1¼" roundhead wood screws, #10 washers, 1"x17 brads, double-faced (carpet) tape, finish.









CUTTING THE TAPERS

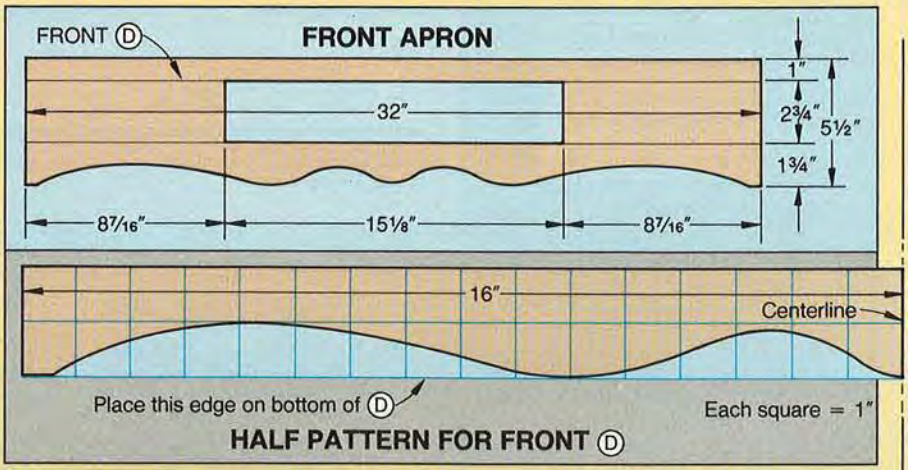
STEP 1 Adjust the taper jig so the marked cutline on the leg is parallel to the fence.
STEP 2 Position the fence so blade aligns with the cutline.
STEP 3 Cut two adjacent sides on all four legs.
STEP 4 Use carpet tape to adhere the scraps onto the edges from which they were cut, so the remaining marked cutline is parallel with the fence. Do not change the jig angle. Cut two adjacent sides on each leg.

It's time to add the aprons

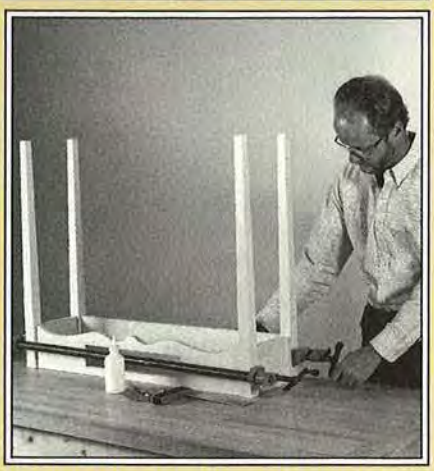
1 Cut the side aprons (B) and back apron (C) to the sizes listed in the Bill of Materials. Cut the front apron parts (D) to the sizes shown on the drawing at *right*.
2 With the ends flush, glue and clamp together the front apron as shown in the photo *below right*.
3 Cut a piece of heavy paper to 2×16", and draw a 1" grid on it. Using the grid pattern at *right* for reference, lay out the half-pattern on the piece of paper. To do this, mark the points where the pattern outline crosses each grid line. Draw lines to connect the points. Cut the pattern to shape, position the bottom of the template flush with the bottom of the front apron, and use it to lay out the curved bottom on one half of the apron. Repeat to mark the outline on the other half of the apron.

Now, join the aprons to the legs

1 Using dowel centers, transfer the dowel-hole centerpoints from the legs to the side aprons (B), back apron (C) and front apron (D). The aprons set back ⅜" from the face of the legs where shown on the Corner Detail.
2 Drill ⅜" holes 15/16" deep for the dowel pins where marked in the ends of the aprons.
3 Glue and clamp a side apron between a front and rear leg. Using the two other legs and side apron, repeat the process.

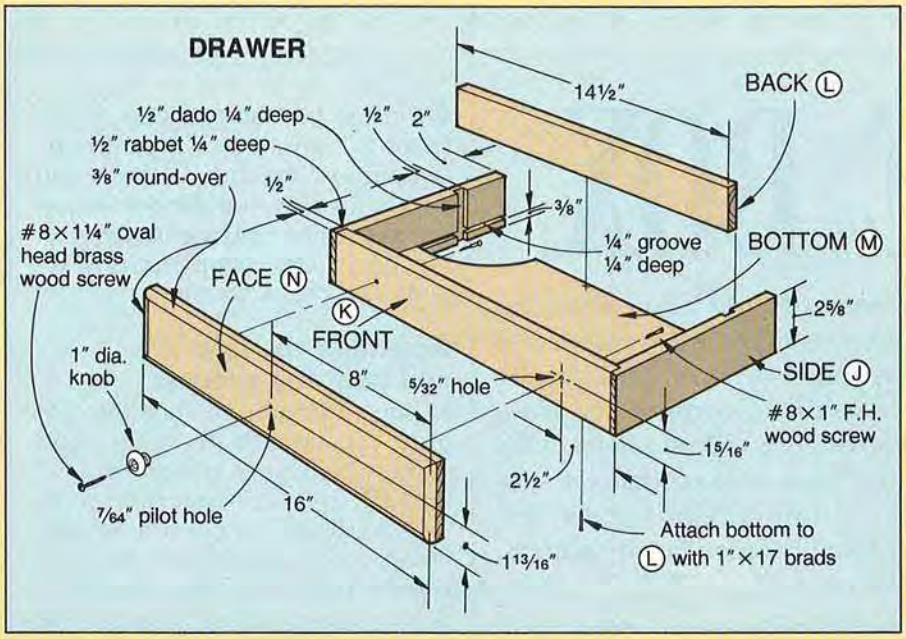


Check that the ends are flush when clamping the front-apron pieces.



Clamp the front apron and back apron between the leg assemblies.

4 Glue the back apron (C) and front apron (D) between the leg assemblies as photographed *above right*. Check for square.
5 Cut the cleats (E) to size. Drill the mounting holes. (As shown in the Corner Detail accompanying the Exploded-View Drawing, we drilled one of the top mounting holes oversized. This allows the mounting screw to move slightly as the top expands and contracts.) Glue and screw the cleats to the inside edge of the side aprons.



Next, install the drawer guides

1 To verify the length, measure the distance between the front and back aprons. Cut the drawer liners (F) and guides (G) to the sizes listed in the Bill of Materials and to the measured length.

2 Glue and nail the guides flush with the top and bottom edges of the drawer opening where shown on the Exploded-View Drawing.

3 Cut the mounting cleats (H) to size, and glue and nail them to the outside surface of each drawer liner flush with the ends.

4 Glue and nail the drawer-guide assemblies (F, G, H) between the front and back aprons. The inside edge of the drawer liners (F) should be flush with the inside edge of the drawer opening in the front apron.

And now for the tabletop

1 Cut three pieces of ¾" pine stock to 37" long by 3½" wide for the top panel (I). Edge-join the pieces with the surfaces and ends flush. Use clamp blocks to prevent denting the pine edges.

2 Scrape the excess glue and sand smooth. Trim the top panel to 36" long. Rout a ½" round-over bit along the front and side edges of the tabletop. See the Edge Detail accompanying the Exploded-View Drawing for reference.

Add the drawer for a bit of storage

1 Rip and crosscut the drawer sides (J), front (K), back (L), and bottom (M) to the sizes listed in the Bill of Materials.

2 Cut a ¼" groove ¼" deep, ⅜" from the bottom edge of the drawer sides and drawer front. (See the Drawer Drawing for reference.) Now, cut a ½" dado ¼" deep, 2" from the back end of each drawer side. Also, cut a ½" rabbet ¼" deep along the front inside edge of each drawer side.

3 Drill and countersink a pair of 5/32" holes through the drawer front (K) where shown on the Drawer Drawing. You'll use these holes to attach the drawer face (N) to the drawer front later.

4 Dry-clamp the drawer pieces to check the fit of the pieces and to check the fit of the drawer into the front-apron opening. Glue and clamp the drawer together, checking for square. Do not glue the bottom (M) in the ¼" groove; instead, secure it to the back (L) with 1"×17 brads. (We butted masking tape on the inside of each drawer corner to catch excess glue. After the glue dried, we peeled off the tape. This saves lots of sanding and prevents unsightly chisel or scraper marks that result from trying to remove the hardened glue from the soft pine.)

5 Cut the drawer face (N) to size. Drill a ⅛" hole in the center of the face for attaching the knob.

6 Rout a ⅜" round-over along the front edges of the drawer face.

7 Screw the drawer face (N) to the drawer front (K).

Sand smooth and add the country finish

1 Sand smooth the base, tabletop, and drawer.

2 Finish as desired. For information on how to achieve the country look like that on the sofa-table base, refer to the country-finish techniques article starting on page 46. (For the sofa table and other pieces in this section, here are the finishes in the order we applied them: Wood Kote's traditional walnut stain, clear lacquer, Sherwin-Williams cajun red paint, Stubb's soldier blue paint, Bartley's jet mahogany gel stain, and two coats of satin polyurethane.)

3 Stain the tabletop and apply the finish. (We used Wood Kote's traditional walnut stain. After that dried, we used a toothbrush to splatter on Bartley's jet mahogany gel stain, followed by two coats of clear satin polyurethane.)

4 When dry, place the tabletop (I) upside down on a blanket on your workbench. Position the table base, also upside down, on the tabletop. With the back edges flush, center the base from side to side. Screw the base to the top through the mounting cleats (E) where shown on the Exploded-View Drawing. Insert the #10×1¼" roundhead wood screws with washers through the ⅜" holes and drive tight. Then, loosen the screw one full turn to allow for seasonal expansions and contractions of the tabletop.

5 Add a 1" knob to the drawer. (We used a porcelain knob—available at most hardware stores—and attached it with a #8×1¼" oval head brass wood screw. To prevent the screw from working loose, we added a drop of epoxy to the threads.)

Country Section Produced by Marlen Kemmet

Project Designs by Gray Fisher

Photographs: Hopkins Associates; Bob Calmer

COLONIAL CANDLE BOX

Because they provided the only source of light other than the fireplace in colonial American homes, candles were important to our forefathers. Early American woodworkers built candle boxes to store and to protect this valuable commodity from heat and from mice, which feasted on the tallow shafts. Like many of the originals, the lid on our pine box contains a simple-to-carve decorative design and thumb grasp. Larger versions of this same box were constructed to store family papers, records, and other valuable documents.

Print this article

First, machine the box parts

1 From ½" pine stock, cut a piece 3½" wide by 24" long for the box sides (A) and back (B). Now, cut the front (C) to the size listed in the Bill of Materials.

2 Cut a ¼" groove ¼" deep and ¼" from the top and bottom edges of the 24"-long piece. See the Exploded-View Drawing for reference. Now, cut the same-sized groove ¼" from the bottom edge of the front piece. (We used a ¼" dado blade to make the cuts. You also could fit your table-mounted router with a ¼" straight bit and fence to form the groove.)

3 Crosscut the sides (A) and back (B) to length from the 24"-long grooved board.

4 Cut the box bottom (D) to size from ¼" plywood. (We cut the bottom 1/16" smaller in length and width than the opening to allow for expansion and contraction of the box.) Dry-clamp the box together to check the fit.

Assemble the box and plug the grooves

1 Glue and clamp the box (do not glue the bottom in place; you want it to float in the grooves).

2 Nail the box together with ⅞"×17 brads. Check for square. Using a nail set, indent the nails slightly below the pine surface.

3 Cut a piece of pine to ¼×¼" by 12" long (we used a dovetail saw). Crosscut six pieces ⅜" long from the strip for the groove filler blocks. See the Exploded-View Drawing for reference.

4 Glue the filler blocks in the ends of the exposed grooves. Let the glue dry, and then trim and sand the ends of the blocks flush with the surfaces of the box.

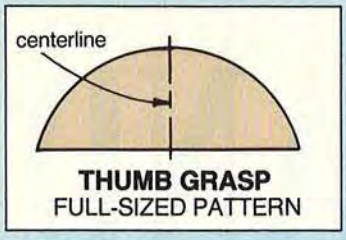
Cut and shape the lid; then sand and add the finish

1 Cut the lid (E) to size. Using carbon paper, transfer the full-sized heart pattern to the top of the lid where located on the Exploded-View Drawing.

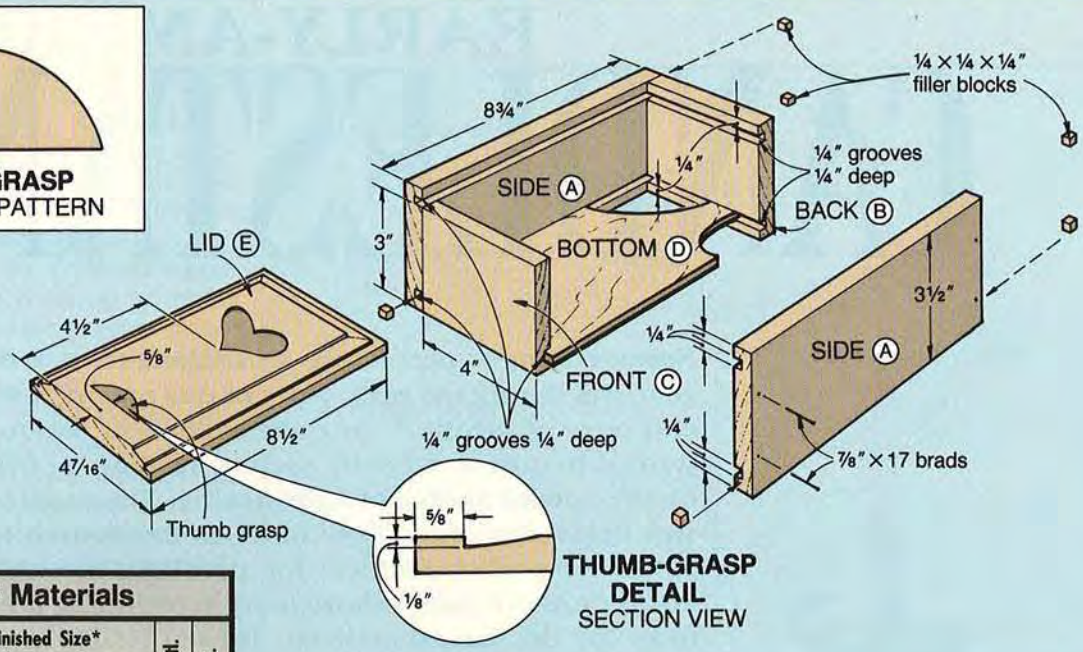
2 Carve the outline of the heart with a hobby knife (we cut about ⅛" deep). Using a ¼" chisel (you could also use a carving gouge if you have one), remove the stock inside the cut outline as shown in the photo at *right*. (We used double-faced tape to hold the lid securely to our workbench top when we carved the heart.) For a more realistic look, leave the faceted chisel cuts visible.

3 Transfer the thumb grasp outline to the lid. Then, shape the thumb grasp using the procedure listed *above* and the Thumb Grasp Detail accompanying the Exploded-View Drawing.

4 Using Step 1 of the drawing *above right* for reference, cut



THUMB GRASP
FULL-SIZED PATTERN



THUMB-GRASP DETAIL
SECTION VIEW

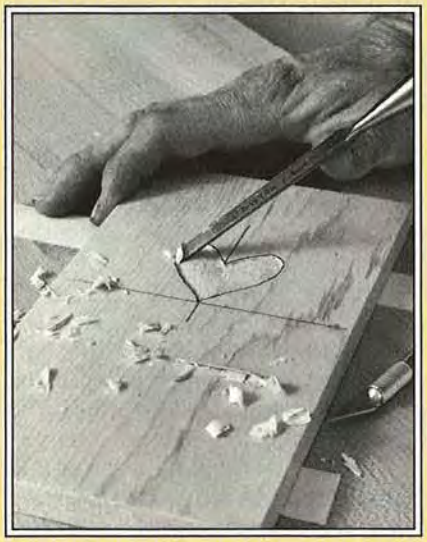
Bill of Materials

Part	Finished Size* T	W	L	Mat.	Qty.
A* sides	½"	3½"	8¾"	P	2
B* back	½"	3½"	4"	P	1
C front	½"	3"	4"	P	1
D bottom	¼"	4 7/16"	8 3/16"	PW	1
E lid	½"	4 7/16"	8½"	P	1

*Initially cut parts marked with an * oversized. Trim each to the finished size listed according to the how-to instructions.

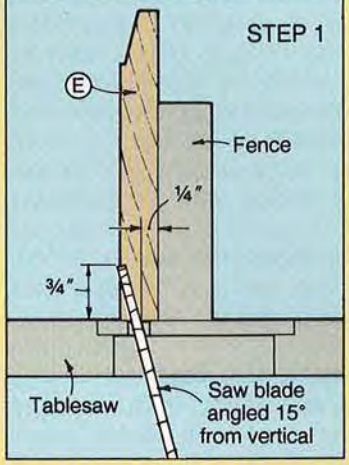
Material Key: P-pine, PW-plywood

Supplies: double-faced tape, 7/8"x17 brads, finish.

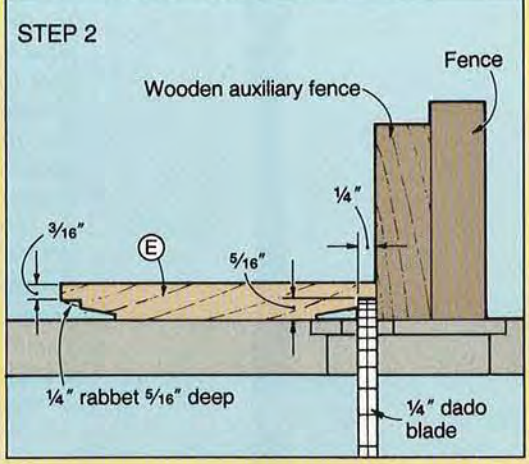


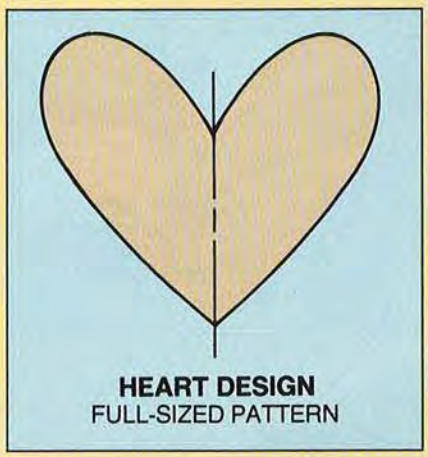
After outlining the heart with a hobby knife, remove the stock with a chisel.

CUTTING BEVELS



CUTTING THE RABBETS





HEART DESIGN
FULL-SIZED PATTERN

a bevel along three sides of the lid. Switch to a ¼" dado blade and refer to Step 2 *above* to cut the rabbet along the same three lid sides. Check the fit of the lid in the grooves in the box; trim if necessary for smooth operation.

5 Sand the box and lid. Paint the candle box. To achieve the country look as shown, refer to the country-finish techniques article starting on page 46. Then, read the section on finishing the sofa table on page 37 for the names of the paints and finishes we used.

Print this article

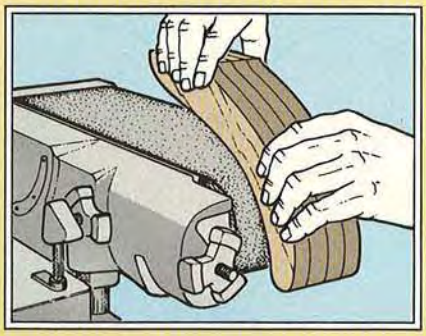
EARLY-AMERICAN CANDLESTAND

Nowadays, most people use a candlestand as a decorative accent. But during the early years of this nation, it was an important piece of furniture for quite a different reason. If someone wanted to pursue a hobby such as reading or needlework, he or she needed sufficient light nearby. The candlestand, which was lightweight enough to move to the desired location, provided the perfect platform for that light source—the candle. Today, you can take a shortcut by substituting a 2×2×30″ baluster for the turned pedestal. Turned balusters—used to support hand railings—are available at most homecenters.

Note: *Like the originals, our candlestand is designed for candles and small objects. If you wish to use the stand for larger items, increase the spread of the legs and the diameter of the top for more stability. For example, the turned-pedestal display table we presented in the August 1985 issue of WOOD® magazine had a 14″-diameter top and a 17″-long spread from toe to toe on the legs.*

Start with the legs

1 Using the Leg Pattern on page 42 for reference, use tracing paper or a photocopy machine to make a copy. (We made a photocopy, adhered it to ⅛″ hardboard with spray-on adhesive, and then cut the hardboard template to shape on a bandsaw.) Cut the paper pattern to shape, and use it as a template to mark four leg outlines on ¾″-thick pine stock.



2 Bandsaw the legs (A) to shape. Using double-faced tape, tape together the legs, face-to-face, with the edges and ends flush. Using the round end of a stationary or belt sander, sand the edges of the legs flush as shown at *left*.

3 Using a square, mark the dowel-hole locations on each leg. Separate the legs and remove the double-faced tape.

4 As shown on page 42, use a doweling jig and drill ⅜″ holes ¾″ deep where marked.

5 Rout or sand a ⅛″ round-over on all edges of each leg, *except* those that will fit against the baluster. See the drawing at *right* for reference. Sand the legs.

A turned pedestal that requires no lathe

1 If you're a turner, you might enjoy turning the pedestal. If not, buy a 2×2×30″ baluster. (We used a Mansion Industries

2×2×30" traditional baluster, part no. P230TR.) Although it's called a 2×2 baluster, ours measured 1⅝" square. Crosscut the top end for a 28" finished length.

2 Mark reference centerlines on the bottom of the pedestal where shown on the drawing at *right.* Mark a second line perpendicular to the first line and ¾" from the bottom of the pedestal.

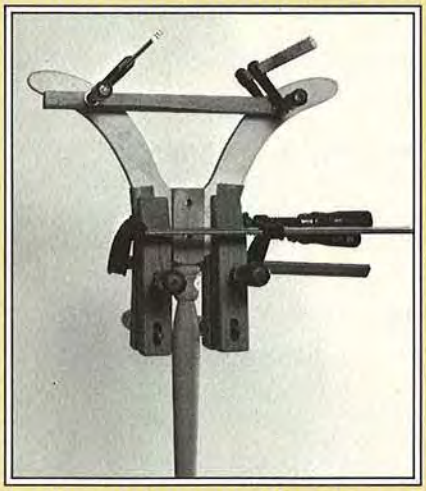
3 Insert a pair of ⅜" dowel centers into the dowel holes in one leg. Align the dowel centers on the reference lines and squeeze the pieces together to transfer the hole centerpoints to the pedestal.

4 Drill ⅜" holes ⅞" deep into the pedestal where marked. Sand the pedestal smooth.

Now, add the legs to the pedestal

1 Glue a pair of ⅜" dowel pins 1½" long in each leg.

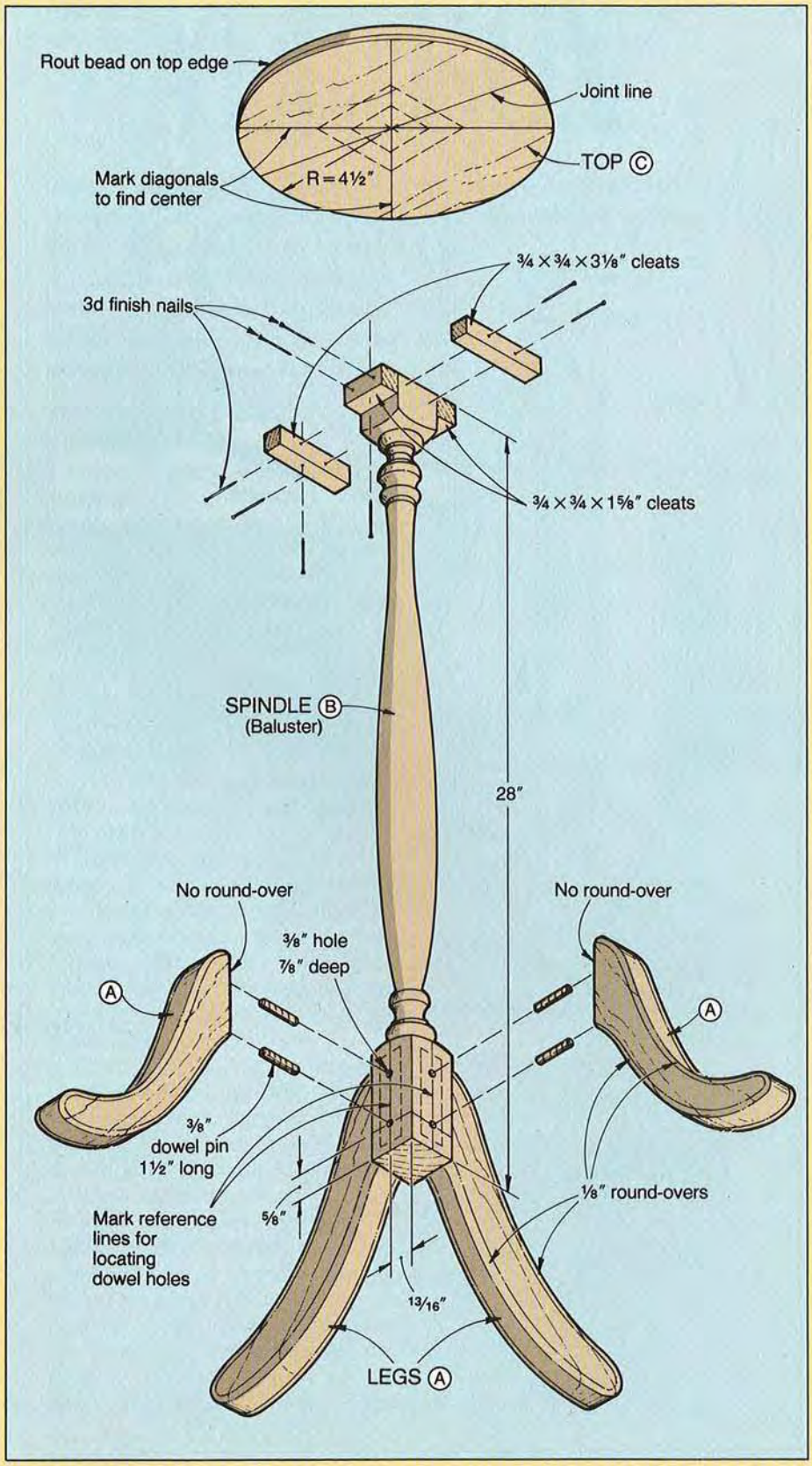
2 Clamp a handscrew clamp to each leg where shown in the photo *below.* (We wrapped sandpaper between the leg and clamp to prevent the clamp from slipping.)



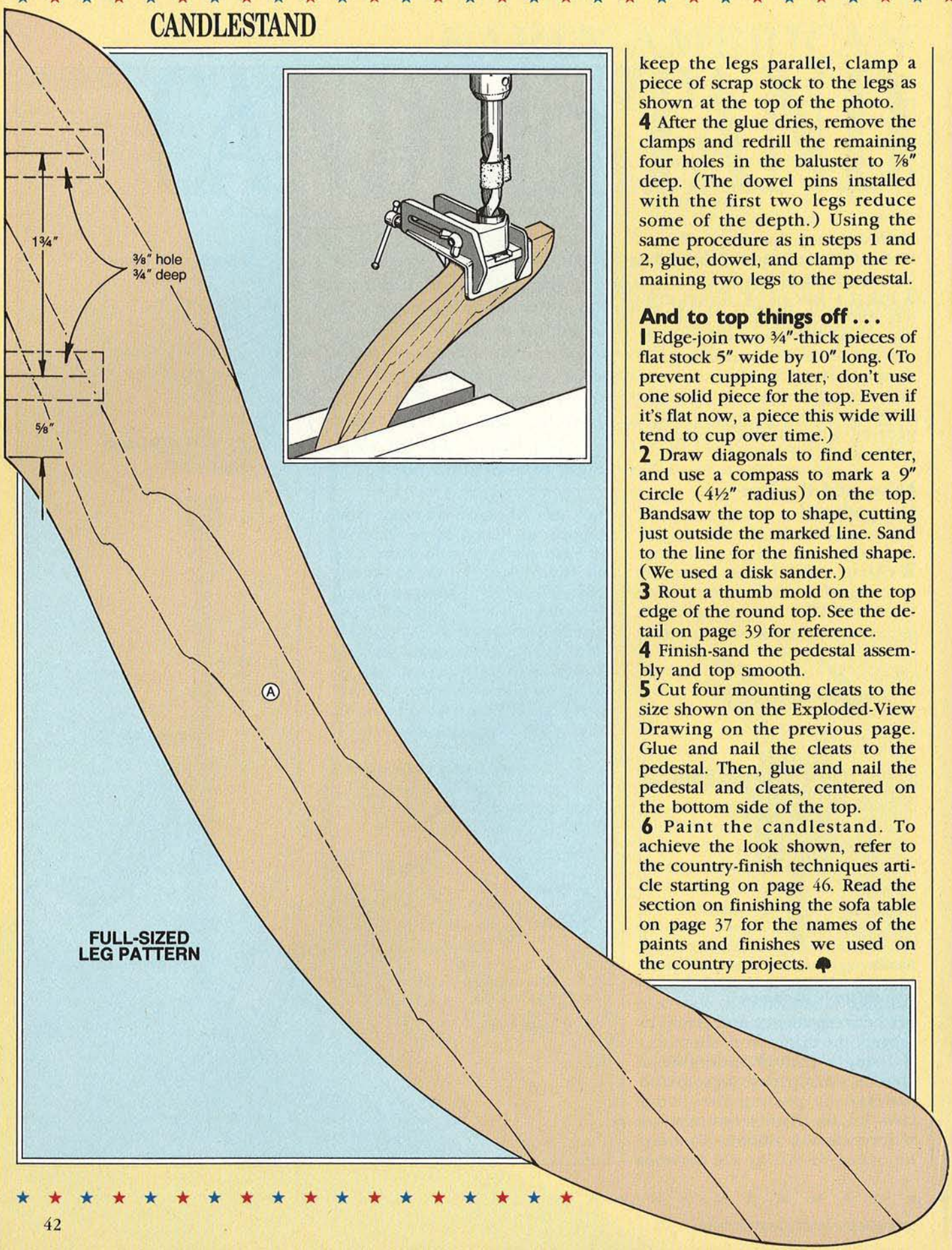
Handscrew clamps provide the necessary flat surfaces for aligning the legs with sliding-head clamps.

3 Using a pair of sliding-head clamps, clamp two legs to the pedestal by placing the clamp jaws on the handscrew clamps where shown *above.* To help

Continued



CANDLESTAND



keep the legs parallel, clamp a piece of scrap stock to the legs as shown at the top of the photo.

4 After the glue dries, remove the clamps and redrill the remaining four holes in the baluster to ⅞" deep. (The dowel pins installed with the first two legs reduce some of the depth.) Using the same procedure as in steps 1 and 2, glue, dowel, and clamp the remaining two legs to the pedestal.

And to top things off . . .

1 Edge-join two ¾"-thick pieces of flat stock 5" wide by 10" long. (To prevent cupping later, don't use one solid piece for the top. Even if it's flat now, a piece this wide will tend to cup over time.)

2 Draw diagonals to find center, and use a compass to mark a 9" circle (4½" radius) on the top. Bandsaw the top to shape, cutting just outside the marked line. Sand to the line for the finished shape. (We used a disk sander.)

3 Rout a thumb mold on the top edge of the round top. See the detail on page 39 for reference.

4 Finish-sand the pedestal assembly and top smooth.

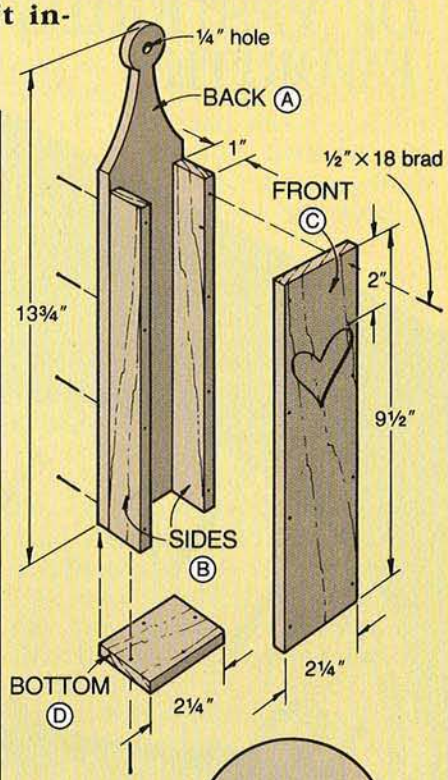
5 Cut four mounting cleats to the size shown on the Exploded-View Drawing on the previous page. Glue and nail the cleats to the pedestal. Then, glue and nail the pedestal and cleats, centered on the bottom side of the top.

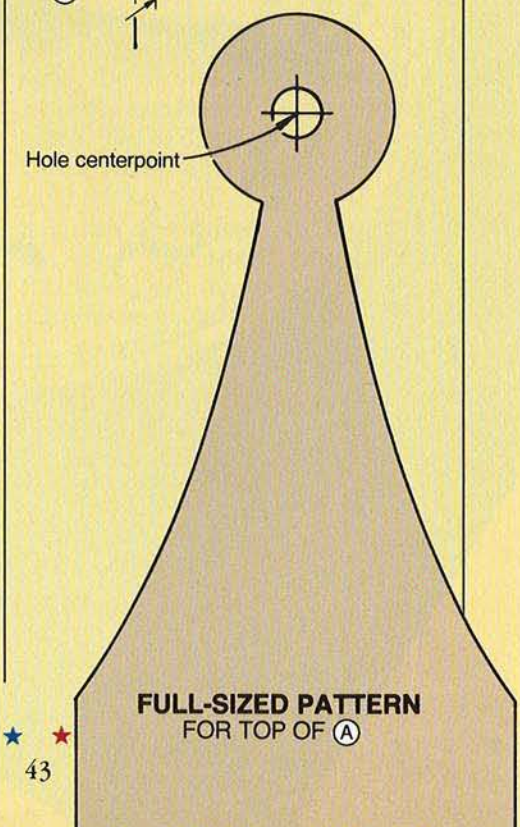
6 Paint the candlestand. To achieve the look shown, refer to the country-finish techniques article starting on page 46. Read the section on finishing the sofa table on page 37 for the names of the paints and finishes we used on the country projects.

Print this article

PILGRIM'S-PRIDE WALL BOX

This simple project has its roots planted firmly in colonial America. But back then, boxes of this shape couldn't have held matches—they weren't invented until 1816. Rather, colonists stored delicate, long-stemmed clay pipes in similar wall-hung boxes.





Cut the parts and carve the heart

1 From ¼" pine (we resawed ¾" stock to this thickness), cut a piece 2¼" wide by 13¾" long for the box back (A). Use carbon paper to transfer the full-sized top pattern outline and hole centerpoint to one end of the pine. Drill the ¼" hole, and cut the back to shape.

2 Cut the sides (B), front (C), and bottom (D) to the sizes shown at *right*.

3 Transfer the full-sized heart pattern shown on page 39 to the front piece (C).

4 Carve the outline of the heart with an X-acto (we cut about ⅛" deep). Using a ¼" chisel, remove the stock inside the cut outline. (We used double-faced tape to hold the back securely to our workbench top when we carved the heart.)

5 Apply glue to the mating surfaces, and hold the box together with tape. Nail together the box with ½"×18 brads. Using a nail set, indent the nails slightly below the wood's surface.

6 Sand and paint the box. To achieve the country look as shown, refer to the country-finish techniques article starting on page 46. Then, read the section on finishing the sofa table on page 37 for the names of the paints and finishes we used.

Supplies: double-faced tape, ½"x18 brads, finish.

COUNTRY CLOCK

AN UPDATED VERSION OF YESTERDAY'S FAVORITE

Print this article

Clocks were a luxury item in America during the early years. Only the wealthy could afford to have one imported from England. In fact, it wasn't until around 1800, and the invention of the relatively inexpensive mantel or shelf clock, that timepieces came to the masses. Boy, how times have changed!

We ran across the idea for this wall clock (vintage unknown) in a small antique store in Massachusetts. It's powered by an easy-to-install quartz movement.

Buying Guide

- **Dial and movement.** 9½"-diameter schoolhouse dial and a high-torque quartz movement with black hands. Kit no. 71044, $17 ppd., Klockit, P.O. Box 636, Lake Geneva, WI 53147. Or, call 800-556-2548 to order.

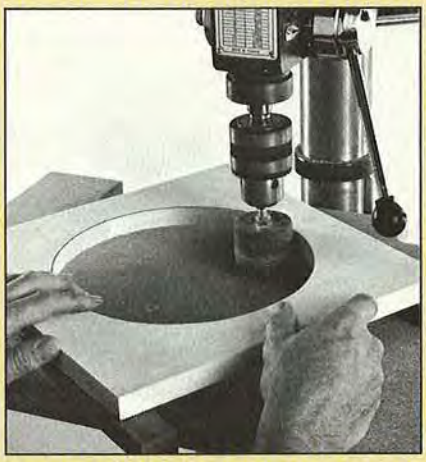
Start with the clock front

1 Cut two pieces of ¾"-thick pine stock to 6½" wide by 13½" long. Glue and clamp the pieces edge to edge for the clock front (A). Immediately remove excess glue with a damp cloth or by scraping lightly with a scraper.

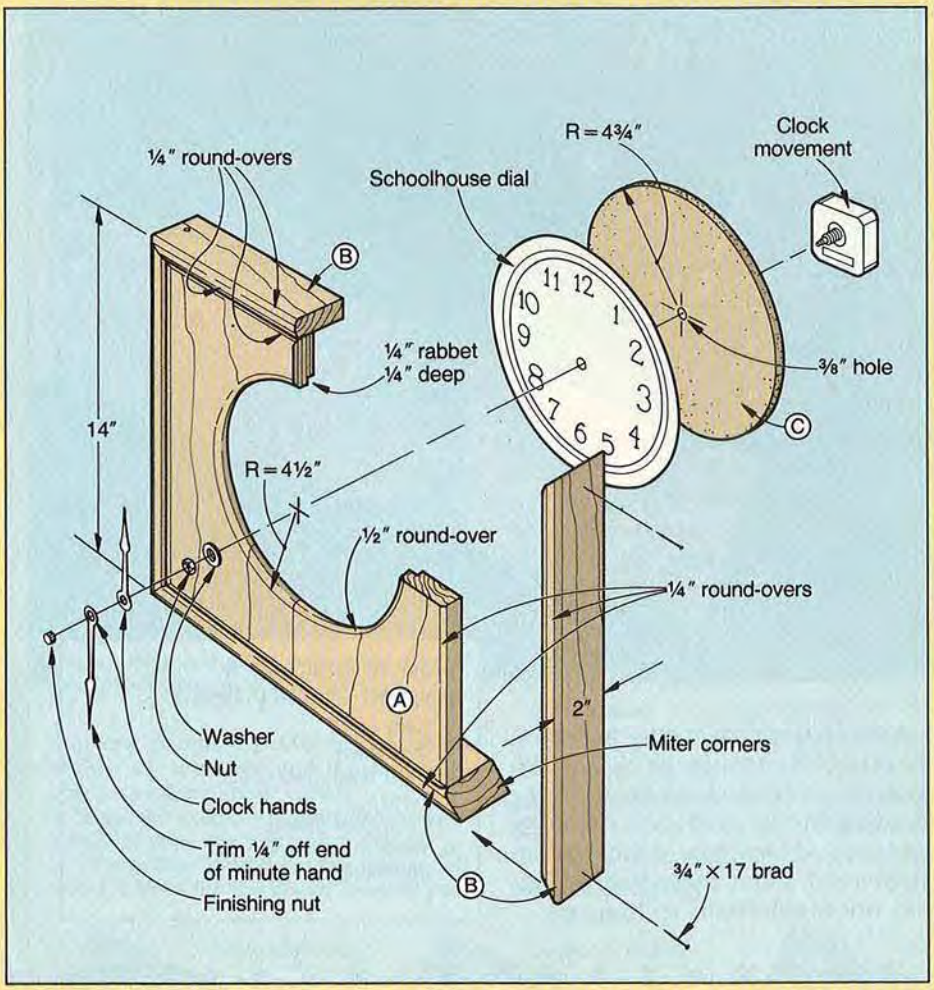
2 After the glue dries, remove the clamps, and trim the clock front (A) to 12½" square.

3 Draw diagonals on the clock front to find center. With a compass, mark a 4½" radius (9"-diameter) on the clock front. Drill a blade start hole on the inside of the marked circle, and use a jigsaw or scrollsaw to cut just on the inside of the marked circle. Then, drum-sand to the line. (As shown in the photo at *right,* we taped spacers to the bottom of the clock front to raise it above the surface of the drill-press table.)

4 Rout a ½" round-over along the front edge of the opening where shown on the Exploded-View Drawing. Switch bits, and rout a ¼" rabbet ¼" deep along the back edge of the opening.



Support the clock front on spacers to drum-sand the opening.



5 Next, rout a ¼" round-over along the outside edges of the clock front. Keep this bit in your router; you'll use it to rout the frame members. Sand the clock front smooth.

The frame comes next

1 Cut two pieces of ¾"-thick pine to 2" wide by 30" long.

2 Rout ¼" round-overs along one edge of each piece.

3 Miter-cut the frame pieces (B) to 14". Glue and nail the frame pieces to the clock front (A). Be sure the frame members are flush with the clock front, and sand.

You're almost done

1 Trace the clock-face outline and shaft opening onto a piece of ¼" hardboard or plywood for the dial backing (D). (See the Buying Guide for our source of the dial and movement.)

2 Drill a ⅜" shaft hole through the backing, and then cut and sand the backing to shape.

3 Adhere the dial to the backing. (We used double-faced tape; epoxy also would work.) Check the fit of the dial and backing into the rabbet in the clock front. (We had to belt-sand the edges of our dial and backing to make it fit.)

4 To "age" the dial, lightly hand-sand the front of the dial with 320-grit sandpaper on a wooden block. Then, dampen a cloth with a bit of stain and lightly wipe the front of the dial.

5 Finish as desired. To duplicate the finish we used, refer to the country-finish techniques article starting on page 46. Then, turn to the section on finishing the sofa table on page 37 for the paints and finishes we used.

6 Secure the dial and backing in the rabbet with hotmelt adhesive. Mount the clock movement to the dial and backing. Snip ¼" off the end of the minute hand. Finally, add the hands and hang.

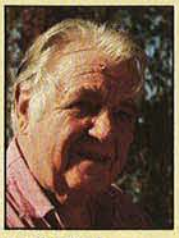
Country photographs: Hopkins Associates; Bob Calmer

Country illustrations: Kim Downing; Mike Henry; Bill Zaun

COUNTRY FINISHES

If you've had any experience building country projects such as those in our Americana Collection on page 33, you know that the finish you apply can make or break the looks of the end product. You have to be able to "age" the piece to make it look authentic.

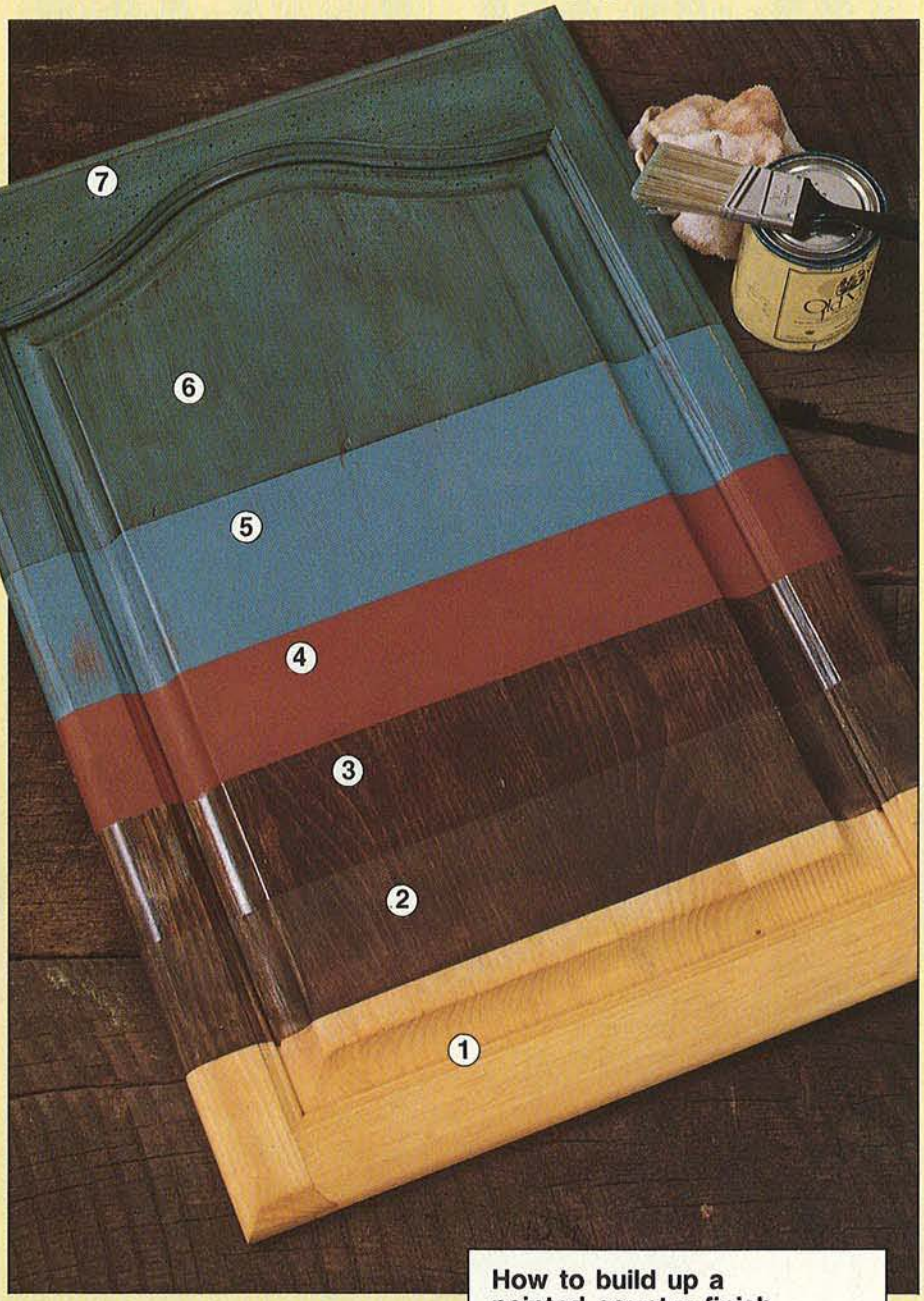
On these five pages, we'll show you how to apply a painted finish that should add at least 100 years to the appearance of your project. You'll also learn how to produce the popular crackled and limed finishes. In case you prefer a clear finish, we'll share a simple method for gracefully aging a natural wood surface.



Dick Fitch

Most of the finishing experiece we have here at *WOOD*® magazine centers around clear finishes. Usually, we like to let the wood show itself off—naturally.

But country finishes are a different matter. And frankly, until recently we didn't know much about the topic. But that was before we met up with Dick Fitch, a master of the art, who consults with the people at the Bartley Collection, Ltd., a woodworking-kit manufacturer and finish formulator in Easton, Maryland. With more than a half-century of experience in paint and other finishes, Dick is a veritable storehouse of knowledge on the subject.



How to build up a painted country finish

1. Bare wood
2. Dark stain
3. Clear finish (two coats)
4. Primer
5. Color coat (paint)
6. Wipe-on antiquing
7. Spattering

Now that we've spent two days working alongside Dick in his shop, and several more experimenting in our own, we're finally ready to show you what we've discovered about these interesting and not-too-difficult techniques.

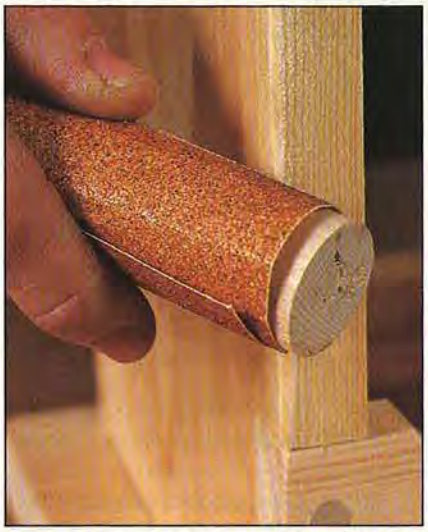
Print this article

IN JUST A FEW DAYS, MAKE YOUR PROJECTS LOOK LIKE ANTIQUES

PROVEN TECHNIQUES FROM THE SHOP TESTED WOOD MAGAZINE SHOP

5 EASY STEPS TO A PAINTED ANTIQUE FINISH

1 **Distress the unpainted surface.** Antiques usually have their fair share of dings, nicks, and scratches. But, before you go about blemishing the surface of your new project, imagine where the object would have received the greatest wear through the years. Then, plan your distressing accordingly. You can use a ball peen hammer to simulate dents, a screwdriver to make scratches, and a rasp to scuff heavily used areas. Then, gently round the edges and corners with 80-grit sandpaper wrapped around a 1" dowel as shown *below left*. For a natural "worn" look, remember to sand the edges unevenly from spot to spot.



For an edge-rounding tool, wrap 80-grit sandpaper around a 1" dowel.

You can purchase paints in the colors shown on this page and the following two pages from these sources:

***Heritage colors available from Sherwin Williams. See your local dealer.**

****From The Stulb Paint Company. Call 800-221-8444 for the dealer nearest you.**

And, don't overdo it. If a surface would have received little wear over the years, leave it alone. As Dick Fitch told us: "You want to distress—not destroy."

2 **Apply the finish in layers** as shown in the photo *opposite*. This process yields great results, but it does require up to seven coats of finishes. So, be patient. As you'll see in Step 3, these multiple layers will lead to the aged look you're after.

To start, wipe on a dark stain and let dry. Then, apply two protective layers of a clear finish (preferably polyurethane), and lightly sand the second coat before laying down a primer paint. The primer can be any paint, but it should be close in color to one of the favorite colonial primer colors: iron-oxide red (our favorite), black, or mustard yellow.

After the primer dries, follow up with the color coat. (The earthy hues shown at the bottom of the following pages look great on country projects.)

Latex and oil-based paints work fine, and you can apply one over the other. However, always sand an oil-based paint before applying a latex finish over it. Otherwise, the latex material may pool or not adhere properly.

3 **Now, roll back the years** by using 320-grit sandpaper to wear away the color coat along edges, corners, and other areas where the paint would have worn off through use. Although 320-grit paper loads up fast, a coarser paper cuts too quickly through the various layers. First, lightly sand the entire surface, then sand down to the primer coat around hard-use areas as shown *below*. If you should accidentally sand through the primer, the two clear coats will protect the stained wood. Since old wood is darker than new wood, try not to reveal the bare wood.

320-grit sandpaper helps you remove the color coat without sanding through the primer.

Continued

4 Patina in five minutes? Sure! Just apply a coat of dark oil-based gel stain over the surface, then wipe away most of it with a lint-free cloth as shown *below*. Leave deposits in crevices and other areas not likely to have received wear and cleaning over the years. The residue left behind after you remove the stain simulates the buildup of grime referred to as "patina." For a source of gel stain, see page 50.

To simulate patina, leave accumulations of a dark gel stain in the nooks and crannies of the surface.

5 Add a bit more character by spattering the surface. To achieve this accent (called "fly specks" by some), first mix two parts gel stain with one part mineral spirits in a shallow container. Then, dab an old toothbrush, or a paintbrush with its bristles trimmed to ½" long, into the mixture. Practice your spattering technique on a piece of paper before trying it on your project. Place the brush about 6" from the paper, and run your finger through the bristles. When you feel you have the right touch, add a uniform spattering of fine speckles to the workpiece as we're doing *below*. Don't overdo it. A little spattering goes a long way.

***Note:** Spattering and antiquing work well on non-wood surfaces, too. For example, see page 45 where we aged a clock face.*

After practicing your spattering technique on paper, give the project a uniform coat of fine speckles.

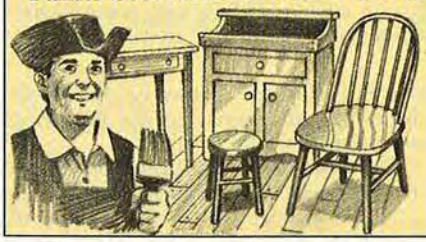
THE CRACKLED

No painted surface looks as old as one that has crackled. This process can take decades to occur naturally, but this method requires only a few days:

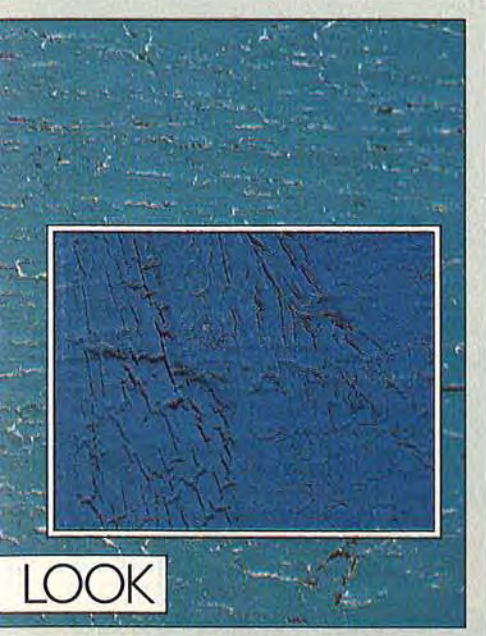
First give the project a base coat of paint if you don't want bare wood to show between the crackles. After this coat dries, brush on a thin, uniform coat of hide glue over any areas that you want to crackle. The hide glue must dry thoroughly, and this may take a day or more. Then, apply latex paint in long, even strokes. In 20 to 30 seconds the paint will begin to crackle. We achieved the effect

Paint: the finish of choice for 18th-century Americans

During colonial times, most citizens painted their furniture. Why? Paints cost less than clear finishes



Saltbox blue* Soldier blue** Arcadian* Village green*



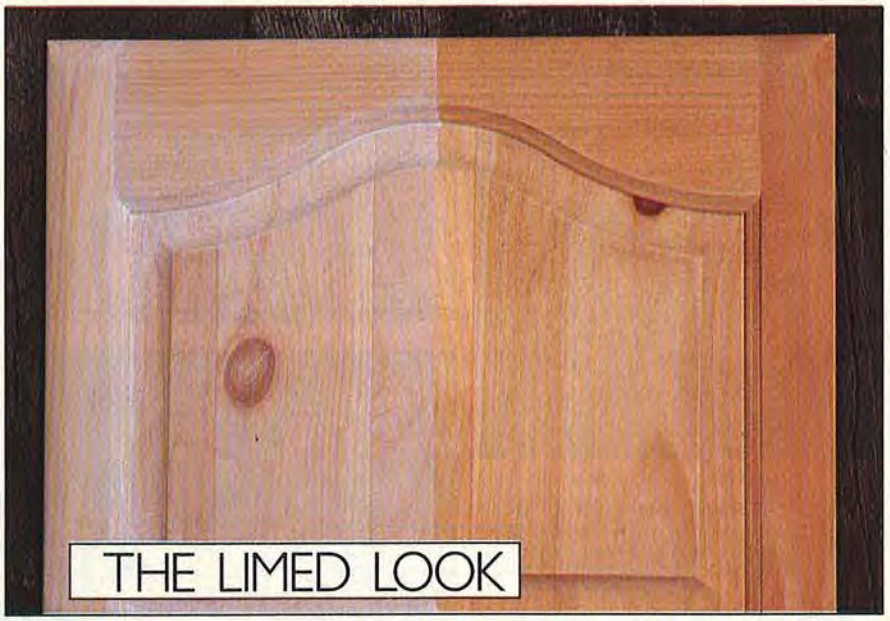
A crackled finish made with latex paints over hide glue and (inset) a crackled surface covered with an oil-based paint

above by skipping the first coat of paint and applying hide glue over bare wood, followed with coats of white and green paint.

Once again, it pays to experiment in order to achieve just the effect you want. If you prefer a more subtle crackling, use the above procedure, but cover the latex coat with oil-based paint, as we did in the example *above inset*. Because the oil-based paint doesn't crackle, it covers the surface completely.

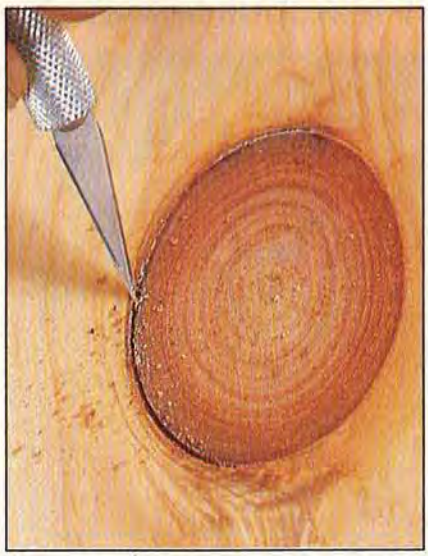
of the day, and applied quicker and easier. Also, furniture was often made from several wood species that would not stain evenly.

For instance, the classic Windsor chair was often made from as many as four different woods. The spindles and legs might be made of oak or maple, the bent back from hickory or ash, and the seat from pine. Imagine trying to evenly stain such a chair!



Liming (left) gives wood a partially stripped look.

When *WOOD* magazine's design editor, Jim Downing, visited the Highpoint International Furniture Show in Highpoint, North Carolina, last fall, he reported seeing a lot of pine furniture with a limed finish. The pieces looked as if they had been painted white and then partially stripped. We investigated the liming process, and found it surprisingly simple.



Accentuate knots by cutting a shallow, paint-holding crevice with an X-acto knife or similar tool.

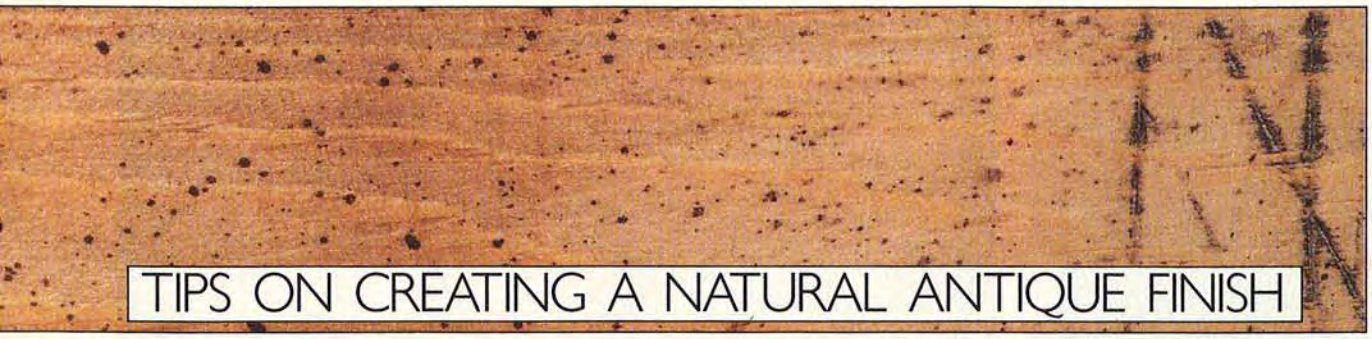
As you can see by the side-by-side comparison *above,* this procedure adds a soft elegance to pine. Open-grain woods, such as oak, soak up more paint, making them look even whiter.

Oil-based paint works best for liming because its longer drying period gives you more working time. To get a shade of white that suits your tastes, experiment by mixing small amounts of black, green, yellow, and other colors into a pure-white base. Also, practice this technique on scrap stock before you lime your project.

To start, brush white paint over the entire surface and wipe it off of the high areas, leaving paint in the crevices and corners. For an added effect, next use a small brush to place more paint in all the crevices, being careful to feather the new paint into the old.

If you want to make the piece look even older, score around the knots with an X-acto knife prior to painting as shown at *left*. Use the same knife to open up glue joints slightly—the extra paint will accentuate the crevices.

Continued



TIPS ON CREATING A NATURAL ANTIQUE FINISH

To make a natural wood surface look old, as we did with the top on the sofa table on page 34, follow these steps:

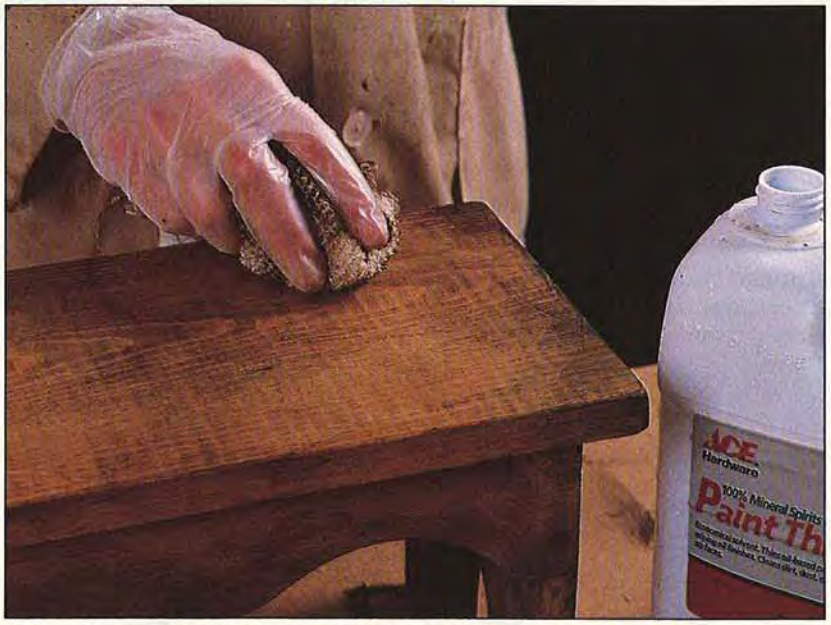
1 **Distress the piece** just as described on page 47, keeping in mind that the surface will look older and older with every scratch, nick, and dent.

2 **Apply a dark stain** to areas such as the base of legs and other places along edges where dirt would likely accumulate over time as shown at *right*. Add the same stain to scratches and nicks to accentuate these blemishes. Again, we prefer gel stains for greater controllability.

3 **Apply a lighter stain** to the remaining areas, and blend the stains where they meet. Let both stains sit for a few minutes, then wipe away the excess.

4 **Lighten heavily worn areas** with paint thinner before the stain dries. As shown at *right,* we lightened the areas of the foot stool where shoes would have likely worn off the finish. To add highlights along edges and corners, sand lightly with 320-grit paper. Now, you can add spatters and a clear coat of your choice.

Apply a dark gel stain to areas prone to dirt buildup.



Before the stain dries, lighten any high-wear areas with paint thinner.

Buying Guide

• **Gel stain.** For a free catalog, write The Bartley Collection, 3 Airpark Drive, Easton, MD 21601.

Written by Bill Krier with Dick Fitch and Jim Boelling
Photographs: John Hetherington

Print this article

WAY TO GO BOSCH!

TWO INNOVATIVE TOOLS YOU SHOULD KNOW ABOUT

Here at WOOD® magazine, we're always on the lookout for tools that help our readers work safer and more effectively. So, Bosch really got our attention when they recently introduced the first scrollsaw with click-in blades, and an easy-to-handle, electric, random-orbit sander. Both machines have smartly designed dust-collection features to boot. Here's what we discovered when we put these tools to the test in the WOOD magazine shop.

Front and rear handles, plus a motor directly over the pad, contributed to overall balance and control in our tests of the Bosch 3283DVS electric-powered random-orbit sander.

The model 3283DVS random-orbit sander: Wow!

Many woodworkers lucky enough to own an air compressor have long known the benefits of pneumatic random-orbit sanders. These tools have round pads that spin in eccentric orbits as shown *below,* so they don't leave the telltale swirl marks left by ¼- and ½-sheet orbital finish sanders. Bosch's electric random-orbit sander has these advantages, plus variable speed for greater control and dust pickup with a dust bag or optional vacuum hose.

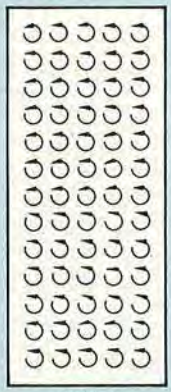
In our tests, the lightweight (4 pounds) model 3282DVS performed quietly, and had good balance because most of its weight sits directly over the pad.

Finally, the 3283DVS has excellent dust extraction thanks to holes in the 5" pad that draw dust directly through perforated abrasive discs. The heavy-duty discs attach by means of Velcro, so they can be changed and reused again and again. A pack of five discs sells at a list price of $3.80. The Bosch machine has a list price of $159. You also can purchase buffing accessories.

COMPARISON OF SANDER PAD ACTIONS

Random-orbit sander

Abrasive grains on the pad of a random-orbit sander spin in large circles as the pad moves in a "jitterbug" fashion. Orbital-sander pads move in tight circles.



Orbital sander

You can add a new blade to the Bosch 1582DVS jigsaw by inserting the blade sideways, then turning it so it faces forward and making a few quick twists of the top knob.

A jigsaw with dust pickup and convenience to spare

Since introducing the world's first jigsaw under the brand name Lesto, Bosch has continually broken new ground in jigsaw technology. Now, they've done it again. Like its companion models, the 1582 (single speed) and 1582VS (variable speed), the 1582DVS (dustless, variable speed) performs superbly in solid stock, particleboard, and plywood. This newest Bosch jigsaw has good balance, control, and operates relatively quietly.

Best of all, though, you don't have to worry about misplacing any blade-changing screwdrivers or wrenches. You simply twist the top knob three times, insert the new blade, and twist the knob again until it clicks. All of the 1582 models have the "CLIC" blade-changing system, and all require that you buy Bosch's bayonet-style blades.

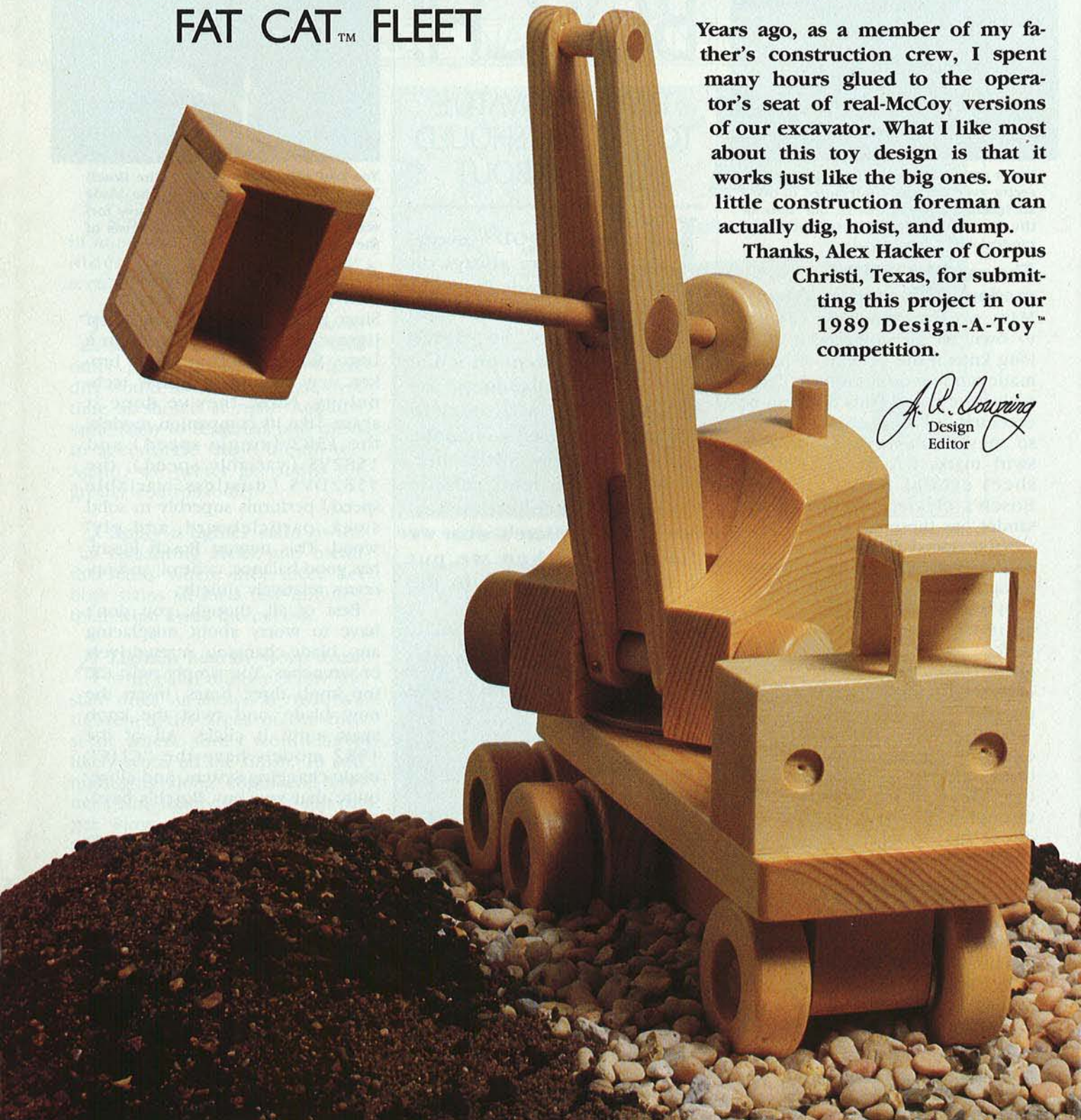
The 1582DVS has a blower to clear chips away from your cut line, and by hooking up an optional 1" vacuum hose, you can pick up most of the dust.

Priced among the Cadillacs of jigsaws at a suggested list of $265, the Bosch 1582DVS performs like a Rolls Royce.

Print this article

SANDBOX EXCAVATOR

PRESENTING A TERRIFIC ADDITION TO OUR FAT CAT™ FLEET



Years ago, as a member of my father's construction crew, I spent many hours glued to the operator's seat of real-McCoy versions of our excavator. What I like most about this toy design is that it works just like the big ones. Your little construction foreman can actually dig, hoist, and dump.

Thanks, Alex Hacker of Corpus Christi, Texas, for submitting this project in our 1989 Design-A-Toy™ competition.

J. D. Downing
Design Editor

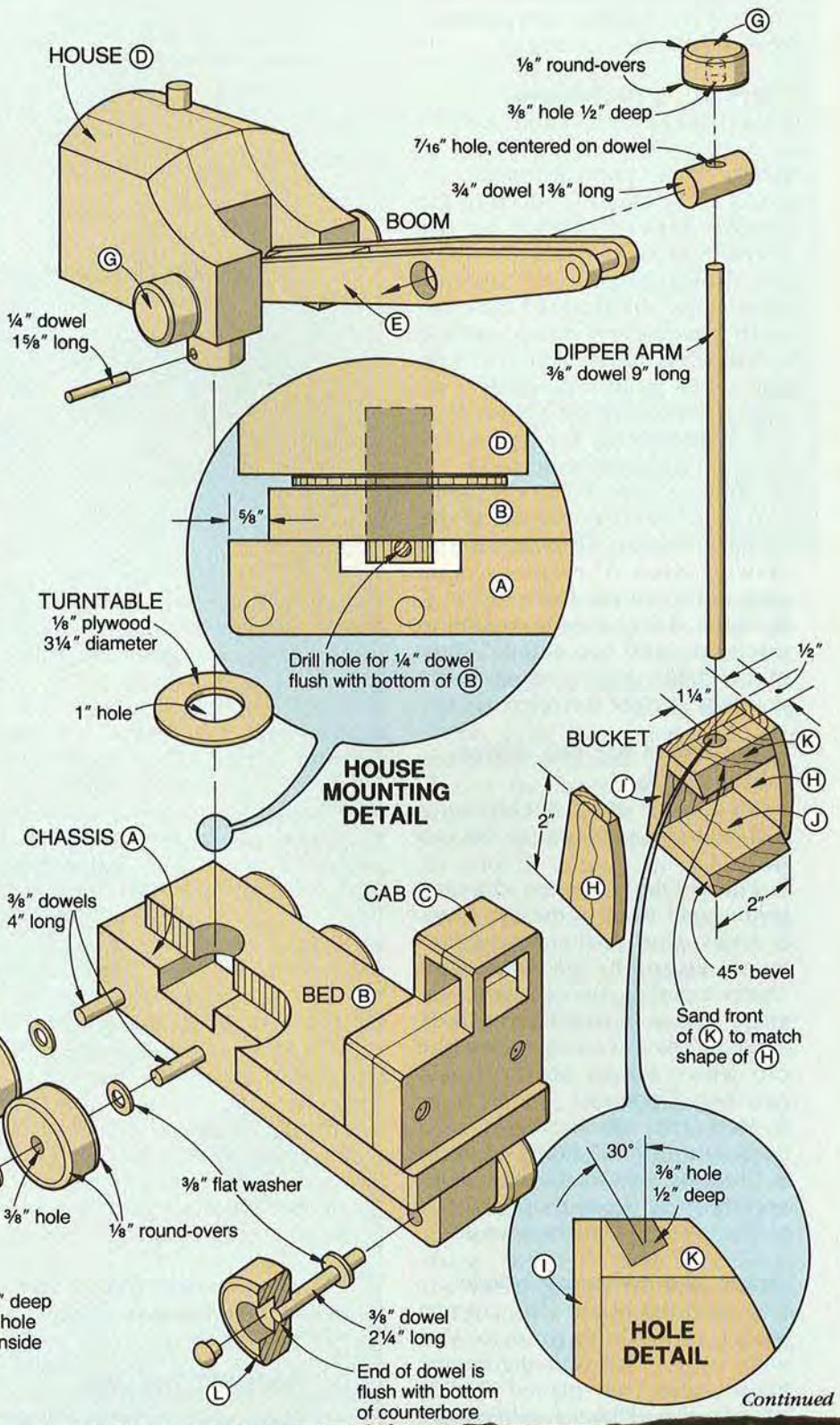
Bill of Materials

Part		Finished Size*			Matl.	Qty.
		T	W	L		
A	chassis	1½"	1½"	9"	P	1
B	bed	¾"	3½"	9"	P	1
C*	cab	1½"	3½"	3½"	LP	1
D*	house	3⅜"	3⅝"	4½"	LP	1
BOOM ASSEMBLY						
E*	boom sides	⅜"	1¼"	8⅞"	P	2
F	spacer	⅝"	⅝"	2"	P	1
G	knobs	¾"	1½" dia.		P	3
BUCKET						
H	sides	¼"	2"	2"	P	2
I	back	¼"	2"	2"	P	1
J	bottom	¼"	2"	2¼"	P	1
K*	top	½"	2"	1¼"	P	1
WHEELS						
L	outer wheels	¾"	2" dia.		P	6
M	inner wheels	¾"	2" dia.		P	4

Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

Material Key: P-pine, LP-laminated pine

Supplies: double-faced tape, ¼" dowel stock, ⅜" dowel stock, ½" dowel stock, ¾" dowel stock, 1" dowel stock, ¾"×17 brads, ⅜" flat washers, ⅛" plywood for turntable, ½" wood buttons, clear finish.



Continued

SANDBOX EXCAVATOR

***Note:** You'll need some thin stock for this project. You can plane or resaw thicker stock to size.*

Start with the chassis

1 Cut the chassis (A) and bed (B) to the sizes listed in the Bill of Materials on the previous page.

2 Cut a 1¾" dado ½" deep in the chassis where shown on the drawing at *right.* Mark the three axle-hole centerpoints on one edge of the chassis, hold the chassis in a handscrew clamp, and use a drill press to drill the 7/16" axle holes. (To minimize wander, we used a brad-point bit.) Now, bore a 1" hole through the bed where located on the same drawing.

3 Sand or rout ¼" round-overs along the bottom ends of the chassis where shown on the drawing. Sand ⅛" round-overs on each corner of the bed.

4 Center the chassis from side to side under the bed and ⅝" short of the bed's back end (see the drawing at *right* for reference).

Make room for the driver, add the cab

1 Cut a piece of ¾"-thick pine to 3½" wide by 12" long for the cab parts (C).

2 Follow the four-step drawing *below right* to form the cab parts.

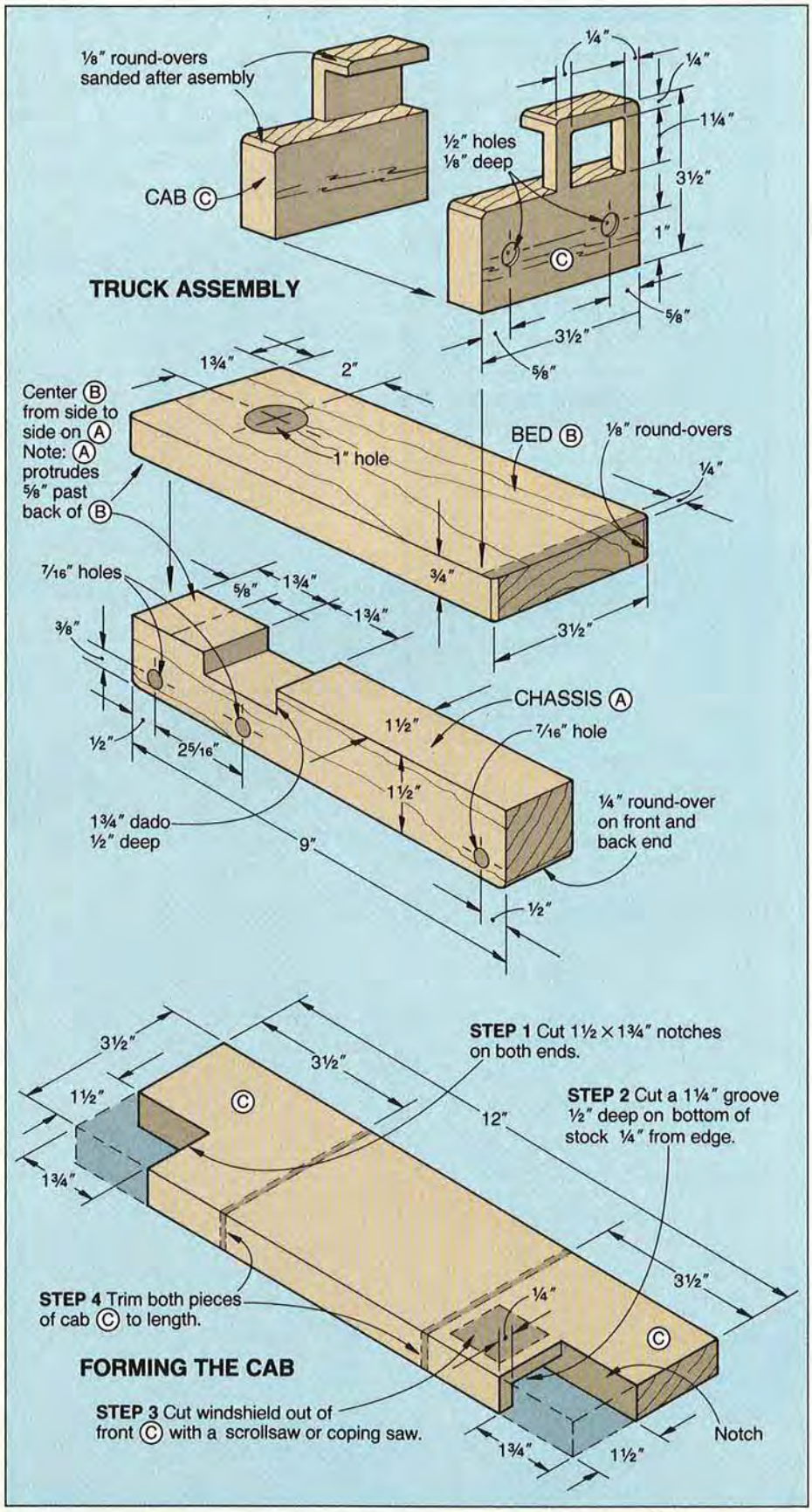
3 Apply glue to the mating surfaces, align the grooves, and clamp together the cab parts. Remove excess glue before it dries. Sand ⅛" round-overs along the cab where shown on the Truck-Assembly Drawing.

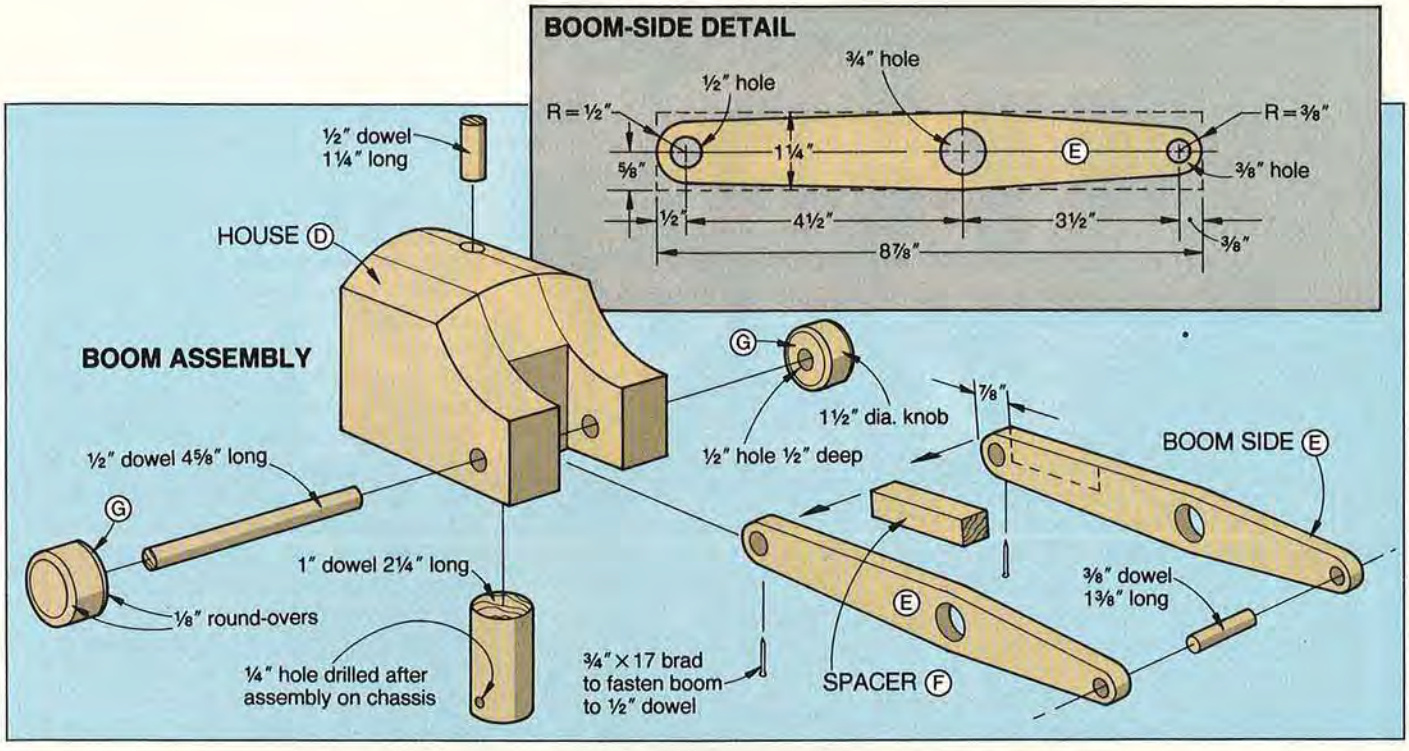
4 Mark the cab headlight locations, and drill ½" holes ⅛" deep.

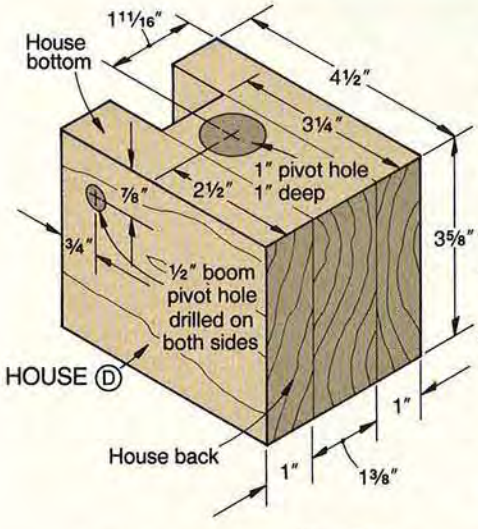
5 Glue the cab to the bed, positioning it ¼" from the front end of the bed to form the bumper.

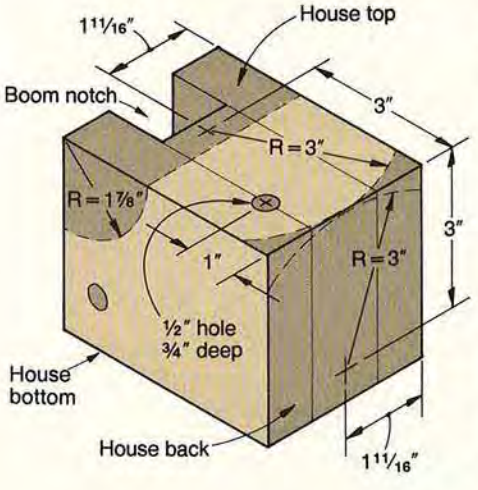
Shape the swiveling house

1 To form the house (D), cut two pieces of 1"-thick pine to 3⅝" wide by 4½" long for the engine house sides (we planed thicker stock to size). Plane another piece of stock to 1⅜" thick. Then, rip it to 3⅝" wide and crosscut it to 3¼" long.









2 With the back ends flush, glue together the three pieces. Immediately remove glue squeeze-out from the boom notch.

3 Mark the centerpoint, and drill the ½" boom-pivot hole through the house sides. (See the drawing at *left* for reference.)

4 Mark the centerpoint, and bore a 1" pivot hole in the bottom of the house. Now, turn the house over and drill a ½" hole ¾" deep for the smokestack.

5 Mark a 3" radius on the back face of the house and bandsaw the radius to shape. Lay out a 3" radius on the top surface and cut it to shape. Next, mark a 1⅞" radius on one front side corner and cut it to shape.

6 Sand the house smooth. Cut a 1" dowel 2¼" long, and glue it into the 1" hole in the house. Cut the 1¼"-long smokestack from ½" dowel stock, and glue it in place.

The boom comes next

1 Plane or resaw two pieces of stock to ½" thick and cut to 1½" wide by 10" long for the boom sides (E). Transfer the outline and hole locations to one of the pieces of stock, using the Boom-Side Detail accompanying the Boom-Assembly Drawing for reference.

2 With double-faced tape, adhere the boom sides together, with the edges and ends flush. Drill the three holes through both boom sides. Cut the boom sides to shape. Sand the edges flush. Remove the tape, and sand smooth.

3 Cut the boom spacer (F) to size. (Held tightly together, the boom sides and spacer assembly should fit snugly in the boom notch in the house. A tight fit prevents the assembled boom from falling down later when held in place with the dowel.) If necessary, cut a new spacer.

4 From ⅜" and ½" dowel stock, cut the dowels to the lengths shown on the drawing *above*.

5 With the holes aligned (we used the dowels to align the pieces), glue and clamp the spacer between the boom sides.

6 Using a bandsaw or circle cutter, cut the three knobs (G) to shape. Drill a ½" hole ½" deep in the center of two of the knobs. Then, drill a ⅜" hole ½" deep in the remaining knob. Sand ⅛" round-overs on each knob.

Next, assemble the bucket

1 Cut the bucket sides (H), back (I), and bottom (J) to size and shape from ¼" stock. Then, from

Continued

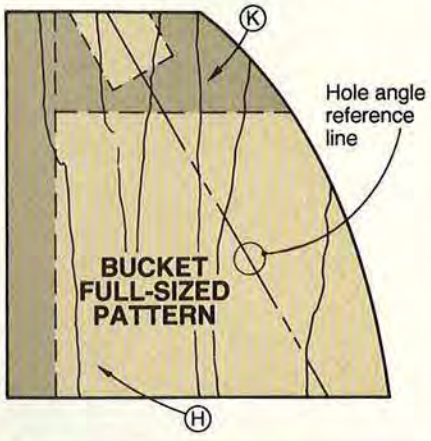
SANDBOX EXCAVATOR

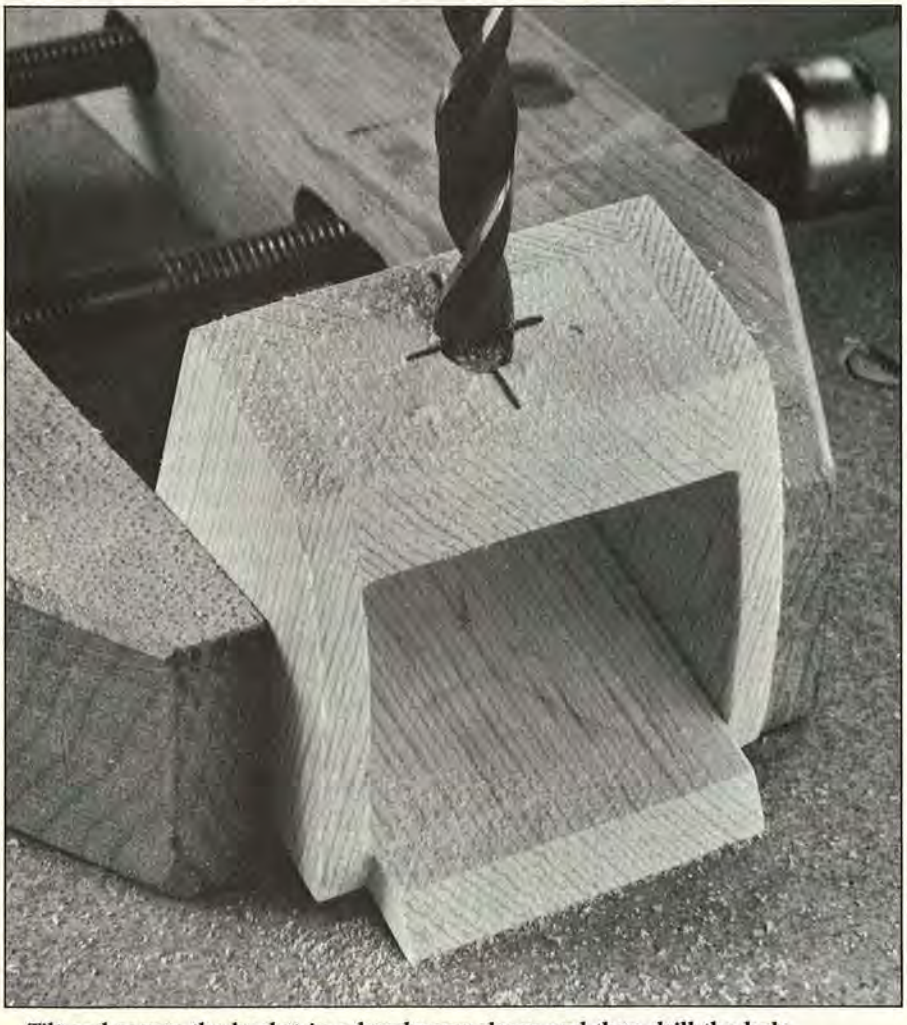
½" stock, cut the top (K) to size. See the Exploded-View and Bucket drawings for reference and the Bill of Materials for sizes.

2 With the edges and ends flush, glue and clamp together bucket parts (H, I, K). Later, remove the clamps and belt-sand or bandsaw the front edge of part K flush with the rounded edge of parts H where shown on the Hole Detail accompanying the Exploded-View Drawing. Sand a bevel on the front edge of the bottom piece (J) and glue it in place.

3 As shown *below,* hold the bucket in a handscrew clamp, and drill a ⅜" hole ½" deep at a 30° angle. (We eyeballed an approximate 30° angle.) See the Hole Detail accompanying the Exploded-View Drawing for reference.

4 For the dipper arm, cut a ⅜" dowel to 9" long. Cut a ¾" dowel to 1⅜" long for the dipper-arm pivot. Drill a 7/16" hole centered through the pivot where shown on the Exploded-View Drawing. Glue the bucket to the arm.





Tilt and secure the bucket in a handscrew clamp and then drill the hole.

Add the Fat Cat wheels

1 Cut the wheels with a circle cutter. Enlarge the ¼" pilot hole in each wheel to ⅜". (For additional help building our Fat Cat wheels, refer to "Now, Forming the Duals" on page 73 of the heavy-haulers article in the February 1990 issue or the same section on page 34 of the lowboy and dump-truck article in the August 1988 issue. For a free reprint of the wheel-making section, send a #10 self-addressed, stamped envelope to Fat Cat Wheels, P.O. Box 11454, Des Moines, IA 50336-1454. Foreign readers: Please include an international reply coupon. For complete Fat Cat plans listed above, send $2 per article with a SASE to the address above.)

2 Drill a 1" counterbore ½" deep, centered in each outside wheel. Sand slight round-overs on the edges of each wheel.

You're nearly ready to move some earth

1 Lay out a 3¼"-diameter circle on a piece of ⅛" stock (we used plywood). Bore a 1" hole in the center, and then cut the piece to shape for the turntable between the house (D) and the bed (B).

2 Finish-sand all the parts. Add the finish. (We used polyurethane. If left unfinished or finished with an oil, pine toys quickly get dirty).

3 Slip the 1" house pivot dowel through the ⅛" spacer and bed. Referring to the House-Mounting Detail accompanying the Exploded-View Drawing, drill a ¼" hole through the center of the pivot dowel. Now, cut a ¼" dowel to 1⅝" long glue it in place to pin the house to the chassis.

4 Using the drawings for reference, add the bucket/dipper arm to the boom. Fasten the boom to the house. Finally, mount the wheels to the chassis.

Produced by Marlen Kemmet
Project Design: Alex Hacker
Photographs: Hopkins Associates; Bob Calmer
Illustrations: Kim Downing; Mike Henry

FIGHT IN THE FOREST

When the final bell sounds, we may all be winners

A mixture of old trees and young make up this old-growth Douglas fir forest in Oregon's Cascade Mountains..

The controversy over logging the Pacific Northwest's remaining old-growth forests has, at times, turned into a bare-knuckles brawl. Environmentalists, waving the banner of the northern spotted owl, have thrown punishing combinations of legal rights and protesting lefts. Loggers, their backs to the ropes, have put industry and congressional muscle behind their punches. And, trying to referee, the Forest Service couldn't duck.

The final bell hasn't yet rung in the squabble over trees in our national forests, a fight where the decision could directly affect the cost and availability of the wood we use for homes and hobbies. But, after weighing in the evidence, we at *WOOD*® magazine sense the outcome—one that undoubtably means big changes in the future.

Continued

FIGHT IN THE FOREST

Ancient forests. Cathedral forests. Old-growth forests. No matter what they're called, these stands of towering firs on public land in Oregon and Washington convey images of either irreplaceable natural beauty or as-yet-untapped riches.

To the Pacific Northwest's forest-products industry, these aged stands represent saw logs, profit, and a way of life. Environmentalists, on the other hand, see the remaining old-growth forest as complex ecological systems—awe-inspiring reference libraries to the past and keys to the future.

"We've found that we only have about 40 to 50 percent of the amount of old growth in the Northwest that the Forest Service has been saying we have."

—Larry Tuttle, director of the Wilderness Society in Oregon

The Forest Service, charged by Congress with managing old growth in the national forests, looks on the centuries-mature timber as necessary inclusions in the annual harvest.

Save old growth. Harvest old growth. That's what the fight has been about. And, it took the early rounds just to decide what old growth actually is.

Coming to terms: commodity or ecosystem?

"In past years, we [the Forest Service] operated under a commodity definition of old growth," explains Barry Cordova, a public-affairs officer with the Forest Service's Region 6 headquarters in Portland, Oregon. "We looked at old growth in terms of how much wood fiber it could produce, and ignored the other attributes."

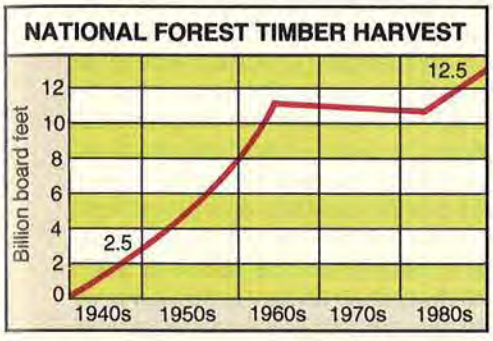
The Forest Service's commodity-oriented definition suited the Northwest forest-products industry to a T. If old growth meant only large, old trees, there were plenty of those on public lands in the Northwest—close to 7.2 million acres, the industry estimates. To their way of thinking, that's enough to protect for the satisfaction of the environmentalists and enough to log for five decades. Besides, say industry spokesmen such as Barry Polsky of the American Forest Resource Alliance, old growth is a successional stage of a forest. If left unharvested, old growth will develop into forests of less desirable (from an industry standpoint) silver fir, hemlock, and alder. And, important at this time, the industry is set up to process large old-growth logs. It wouldn't be economically feasible to reinvest now in new mills and machinery to process the smaller, more uniformly sized second-growth trees not expected to mature for another 20 years.

The environmentalists, however, saw old-growth forest much differently. And in their eyes, what remained of it was too rapidly shrinking.

"We pushed for an ecological definition of old growth," says Larry Tuttle, director of the Wilderness Society in Oregon. That definition, now accepted by both sides and the Forest Service, has detailed, qualifying elements, but basically, for a stand of trees (10-plus acres) to be classed as old growth, it must have:

- two or more species in a wide range of ages and sizes;
- eight or more Douglas fir trees greater than 32" in diameter or older than 200 years;
- several other species at least 16" in diameter covering at least half an acre;

Top: **An aerial view of Oregon's Willamette National Forest, hotbed of old-growth controversy, shows clearcut areas that will be replanted with one species—Douglas fir.**



Bottom: **Environmentalists protest old-growth logging. Industry fears the threat of a complete shutdown at a time when demand is high.**

• a deep overhead canopy of branches in multilayers;
• sufficient standing dead trees (snags) for wildlife nesting; and
• a scattering of dead logs on the forest floor (15 tons per acre).

"Under that definition," notes Tuttle, "we've found that we actually only have about 40 to 50 percent of the amount of old growth in the Northwest that the Forest Service has been saying we have. Instead of 6.2 million acres on national forests, we believe that there's only about 2.4 million acres of ecologically significant old growth, and it's west of the Cascade Mountains [an area easily accessible for logging]. Of that, about 800,000 acres is already permanently protected in national parks or wilderness areas. [*Editor's note: The 19 national forests in Region 6, shown in the map at left, total 24.7 million acres, of which 19.9 is forested. In the U.S., national forest lands add up to 191 million acres.*]

"The balance is scattered between Oregon and Washington, but much of it has been fragmented [stands broken up, by clearcutting, for example] to the degree that it may no longer have ecological characteristics."

To more accurately determine the amount of old growth on the national forests in Oregon and Washington, the Forest Service began taking a new inventory—with new technology—to be completed by 1992. Says the Forest Service's Cordova: "We're concerned. If they're right, we're down to the last 10 percent of original old growth. Unprotected, it will last 10 years, max."

Enter the spotted owl

During the last few years, environmental groups in the Northwest have successfully blocked national forest timber sales that included old growth by turning to the courts for injunctions. Last year in particular, they tied up sales totaling 3.5 billion board feet, about three-quarters of the fiscal 1989 timber sale program in Region 6 national forests. At the time, Mark Rey, vice president of the National Forest Products Association, remarked that the injunctions locked up enough timber to build more than 200,000 houses. To the industry, it couldn't have happened at a worse time—both domestic and international use of paper and wood products were on a dramatic rise.

"We're concerned. If they're right, we're down to the last 10 percent of original old growth. Unprotected, it will last 10 years, max."

—Barry Cordova, Forest Service Region 6 public-affairs officer

That's why last October a congressionally authorized compromise agreement released 7.7 billion board feet of the blockaded national forest wood to the Northwest forest products industry for 1989 and 1990.

In the past, appeals and legal suits have surfaced over everything from possible damage to clean air and water to adherence to federal land policy. In the spring of 1989, the issue to save the Northwest's old growth focused on the northern spotted owl, a visible part of the life cycle that environmentalists say is dependent on the big trees.

Ten years ago, the small, speckled bird that nests in old growth from Washington to California was thought to be practically extinct. Today, the Forest Service claims about 1,500 pairs on national forests. Environmentalists

Continued

FIGHT IN THE FOREST

feel that the spotted owl is still threatened and warrants protection of its old-growth habitat.

A survey of spotted owl habitat by the U.S. Fish and Wildlife Service will be completed in 1992, and assess the threat. Meanwhile, to those in the Northwest dependent on national forest timber for their livelihood, the bird has become a symbol of frustration.

Their trees, your trees, our trees?

The building boom that followed World War II and grew through the 1950s and 1960s cleared most of the timber from private lands in the Northwest and across the nation. To feed a hungry industry, loggers then turned to the vast resource of the national forests.

As a result, logging on federal land increased from 2.5 billion board feet in 1946 to about 12 billion board feet in the mid-1960s, equivalent to 13 percent of total timber production. In the Pacific Northwest, timber harvest from national forests has hovered near 5 billion board feet per year since 1986. (See chart, page 59.)

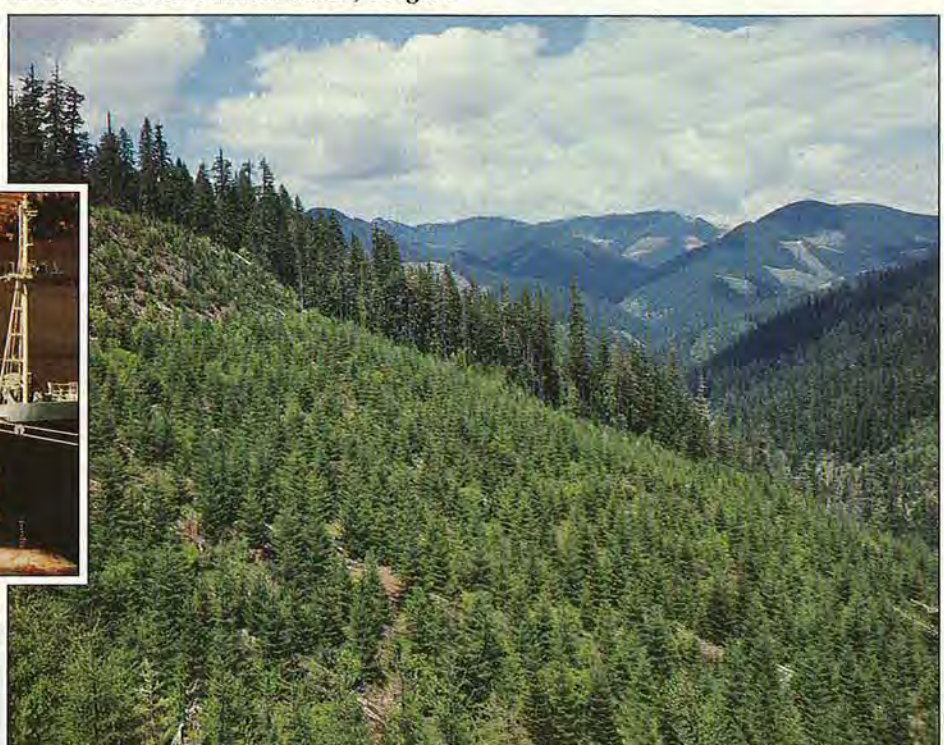
"The old-growth stands on private and state lands have been nearly used up, all cut," explains Cordova of the Forest Service. "Now, we've come down to the last few significant stands on the national forests, and every tree is being fought over."

When it gets right down to it, one of the real reasons for the fight in the forest is the question of ownership. Who has the just claim to old growth on national forest lands? The environmentalists, of course, have their opinion. "We're talking about *publicly owned* forests," comments the Wilderness Society's Tuttle. "The very best tree-growing areas in the Northwest are on private-industrial and private-nonindustrial lands, because those are the lands that companies gobbled up first in the early part of the century. That's why much of the national forest is at higher elevations, with less-desirable soil types than on private lands. Yet, *only* the public [federal] lands are mandated to provide a variety of values in addition to timber. And, we must make sure that it's not just our national forests that produce it."

Chris West, a forester and vice president of the Northwest Forestry Association, along with others in the forest-products industry, believes in saving some old growth. He questions environmentalists' motives, though, in requesting additional national forest land withdrawn from the timber resource. "They play a numbers game," says West. "They say there's only about 100,000 acres of ecologically significant old growth, but they want millions of acres protected. Essentially, they want to shut us down. What they fail to bring up is the question, 'What will we substitute for timber if we have to shut down?' Concrete, steel, synthetics? All are more damaging to the environment than producing wood."

Opponents note that—despite grumbling over the future availability of logs—the forest-products industry finds enough for export. In 1988, export of solid wood products, notably saw logs, exceeded $5 billion, a jump of over $1 billion from the previous year. Of that, companies in the states of Oregon and Washington exported almost 3.7 billion board feet. These logs must come from private or state-owned land, since federal law restricts the export of unprocessed national forest logs.

Softwood forestry in the Northwest has always meant growing trees of even age. Here, land reforested with Douglas fir contrasts sharply with remaining old growth in the Willamette National Forest, Oregon.



At Longview, Washington, a ship loads logs for export to Asia. By law, the logs cannot come from national forest lands.

So, in essence, the two sides have been drawn. Environmentalists believe that the national forests, including those with old growth, should be more than resources for raw material to supply the forest-products industry. They say that the Forest Service's traditional management policy—multiple-use—has become too heavily weighted toward timber production. Old-growth trees and wildlife such as the spotted owl have been the victims.

On the other hand, the forest-products industry relies on the national forests as an economic resource—25 percent of the nation's timber supply comes from federal lands. Trees can be cut, replanted, managed, and cut again—forever. And, they point out, logging doesn't interfere with other national forest uses, such as recreation. Besides, they say, there's already over 90 million acres of protected wilderness.

Temporary compromises have been made between the two factions. Changes, however, seem destined for the decades ahead.

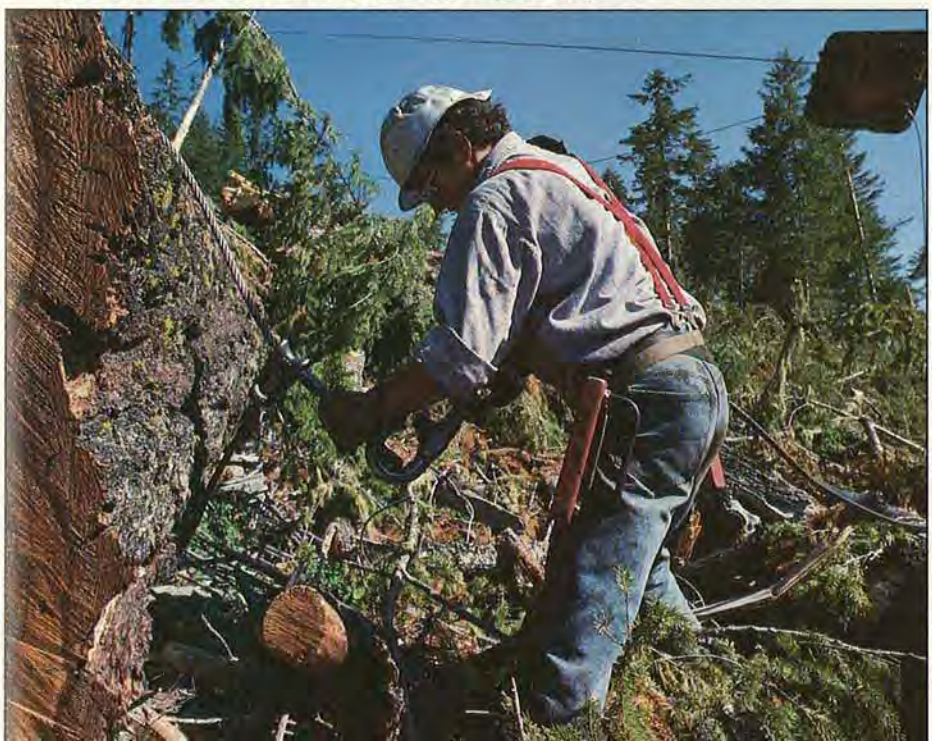
The likely outcome

The fight in the forest may go several more rounds, but here's some likely possibilities for the future:

- *Old-growth controversy will influence national forest management.* Significant stands of old growth in the Northwest will be permanently protected. They will serve as a resource, a genetic pool, not only for the science of growing trees, but as a reserve of knowledge. The Pacific yew tree, for instance, found in old-growth forests, produces resins that have recently proven valuable in cancer research. There may be more secrets to unlock.
- *Foresters on federal timberlands will adapt silvicultural techniques that preserve the complex ecosystems as found in old growth.* Says Frederick Smith, associate professor of forestry at Colorado State University, "We can grow trees over a short period of time or a long period of time, one species or several species. We can mix sizes—tall trees and short trees. We can create snags for nesting and logs on the ground." Techniques to replace fast-growing monoculture (one species) reforestation will be demanded.
- *Major investments will be made by the forest-products industry to handle the Northwest's second-growth fir, as well as produce new products.* More jobs will be created through renewed industry efforts to increase export of products to foreign markets.
- *The Forest Service will shift management emphasis.* The principle of multiple-use became law under the federal Multiple-Use-Sustained-Yield Act of 1960. It requires national forest management to utilize resources in a way that best meets the needs of the American people, from recreation to timber production. Environmental concern will dictate a shift in policy to emphasize forest management for cleaner air and water, wildlife, recreation, and pristine beauty. Logging probably will take a back seat.

"What will we substitute for timber if we have to shut down? Concrete, steel, synthetics? All are more damaging to the environment than producing wood."
—Chris West, a forester and vice president of the Northwest Forestry Association

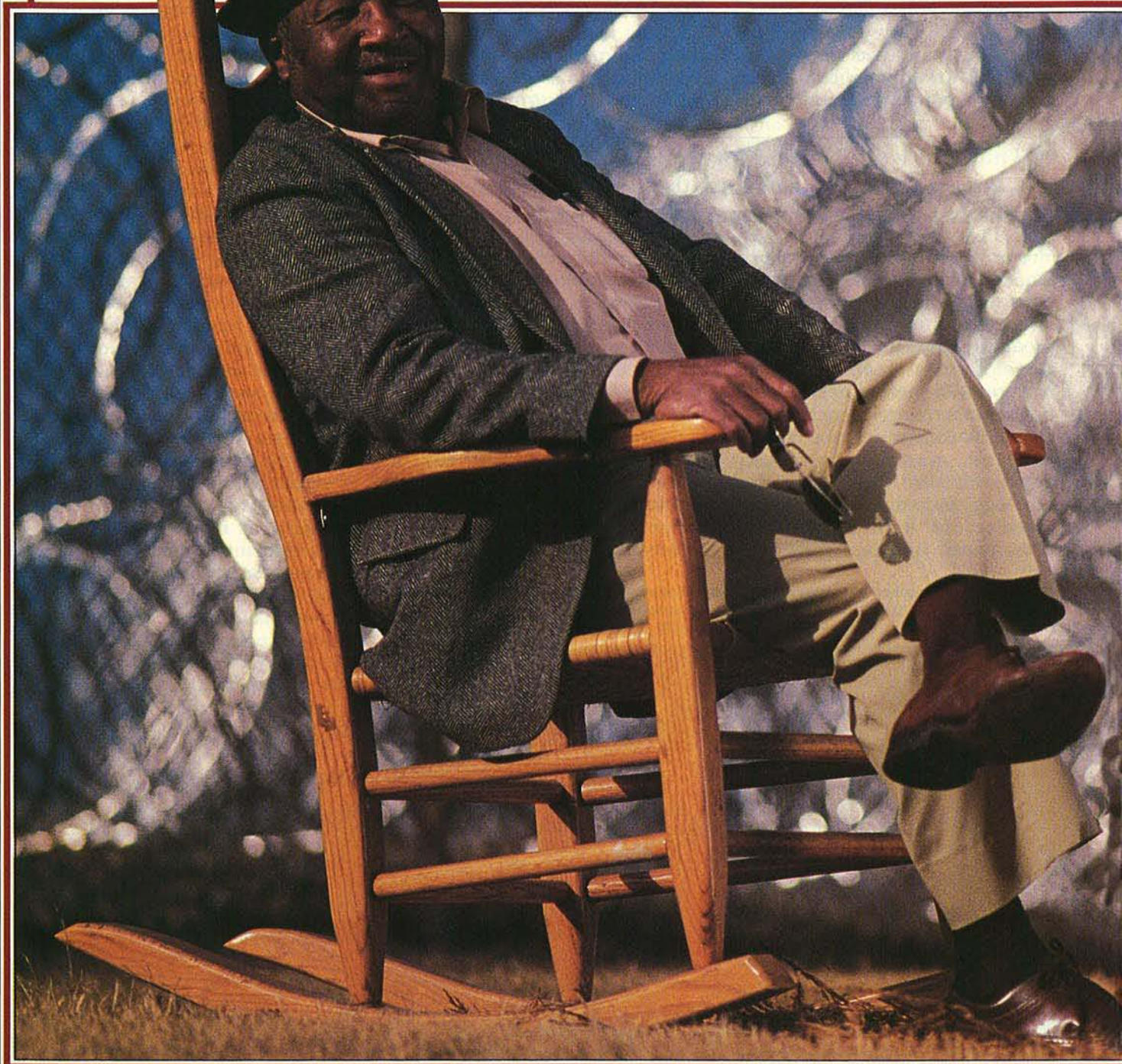
A logger sets a choker chain in the Umpqua National Forest, Oregon. Without national forest timber, the industry couldn't meet all present demand for wood, since reforested lands can't be harvested for another 20 years.



Written by Peter J. Stephano
Photographs: Old growth, Doug Wechsler; Reforestation, clearcuts, protests, logger, ship, by David J. Cross/Biological Photo Service; Owl, N. M. Barrett/VIREO
Compiled with information from the American Forestry Association; American Forest Resource Alliance; Appalachian Hardwood Manufacturers Association; Audubon Society; Colorado State University; Forest Service, USDA; National Hardwood Manufacturers Association; Native Forest Council; Northwest Forestry Association; Public Timber Council, National Forest Products Association; Sierra Club; Western Wood Products Association; Wilderness Society.

A CAROLINA

BEHIND BARS, A FORMER



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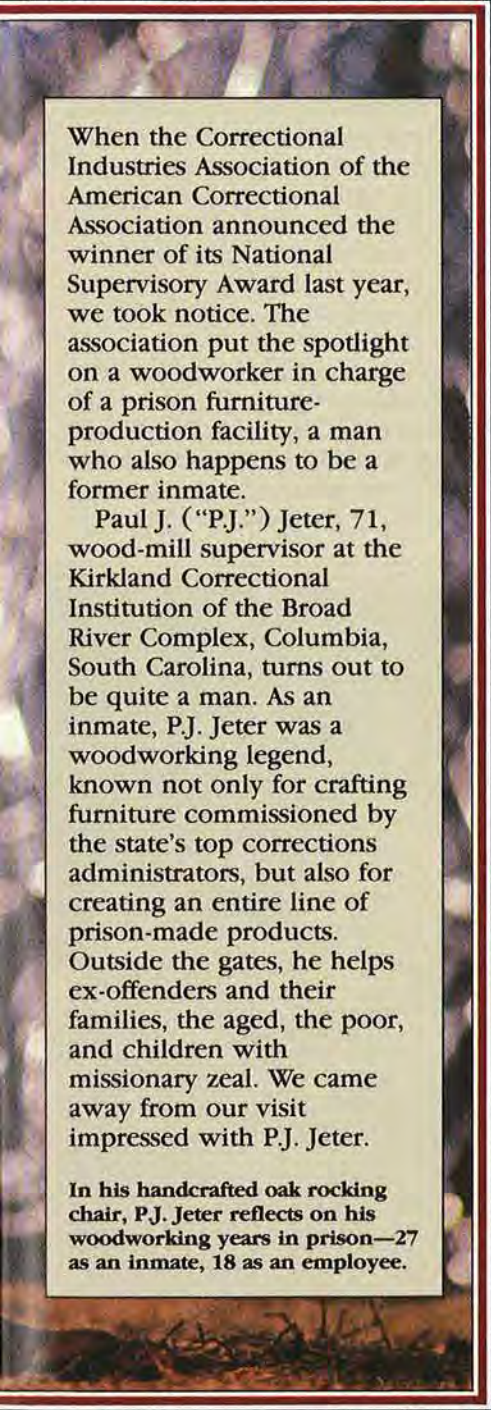
LEGEND IN WOOD

INMATE SHOWS OTHERS THE ROAD OUT



When the Correctional Industries Association of the American Correctional Association announced the winner of its National Supervisory Award last year, we took notice. The association put the spotlight on a woodworker in charge of a prison furniture-production facility, a man who also happens to be a former inmate.

Paul J. ("P.J.") Jeter, 71, wood-mill supervisor at the Kirkland Correctional Institution of the Broad River Complex, Columbia, South Carolina, turns out to be quite a man. As an inmate, P.J. Jeter was a woodworking legend, known not only for crafting furniture commissioned by the state's top corrections administrators, but also for creating an entire line of prison-made products. Outside the gates, he helps ex-offenders and their families, the aged, the poor, and children with missionary zeal. We came away from our visit impressed with P.J. Jeter.

In his handcrafted oak rocking chair, P.J. Jeter reflects on his woodworking years in prison—27 as an inmate, 18 as an employee.

Far across town from Columbia's bustling downtown and the dignified setting of South Carolina's capitol, there's another type of urban lifestyle. On the sweeping acreage once called Walden's Farm, 3,500 inmates of the South Carolina Department of Corrections' Broad River Complex wake up each day just to cross it off the calendar.

A percentage of those who leave Broad River do return, of course. Repeat offenders can't seem to cope with freedom or responsibility on the outside.

That's not why P.J. Jeter, incarcerated in 1945 to face a life sentence and paroled 27 years later, came back, though. He reentered the gates on a mission: To teach inmates the woodworking skills and job performance that build self-pride, responsibility, and the attitude it takes to adjust to society beyond the fence.

A price once paid

Soft-spoken at times, boisterous at others, P.J. Jeter, even at a grandfather's age still burly, has thought about his past. "When I did my time, they gave me my release paper, which is a *receipt*," he says, emphasizing the last word. "I paid the price to society. When I walked out those gates, I walked out as a taxpayer to start with, because the Department of Corrections gave me a job. My first week I was on the tax roll. I didn't go out there feeling like an *ex-convict*. I went out there feeling like an American citizen, a *taxpayer*. Not a *tax user*."

"Mr. Jeter," as he's fondly called up and down the line, attempts to instill that outlook in every inmate who works for him in the Prison Industries' wood mill. "This is the point I get over to everyone I deal with," he explains, the statement's seriousness set in his eyes. "Look at me. I did it. You can do it. You may not do it exactly like I did, but you can do *something* for yourself."

The words aren't bravado. Mr. Jeter speaks with pride, and to those who listen, with a dose of hope. Has his approach worked? How many men have changed?

Mr. Jeter thinks for a second, then begins a story. "I had a lifer that came right out from under [worked for] me. He made parole. Now he's a cabinetmaker at the South Carolina State Law Enforcement Hall of Fame." He reflects, then continues.

"Another, he owns a big janitorial business now. A wife, kids, a respected man in the community." Again, a pause.

"A white boy, he was from Charleston, and he had five years. They said he was a hopeless case. His own mother says he was bad. I took that kid, and first I taught him how to build chairs, gave him a few basics. All he needed was a chance, but nobody had ever spent any time with him," he recalls. "He learned how to build desks. The first decent desk that he built I showed to his mother and father. They didn't believe it.

"When he got out I got him a job with a little cabinet company in Charleston. About 10 years later I heard that he had become part owner of that little cabinet company." Mr. Jeter leans back. His aged swivel chair squeaks.

Continued

A CAROLINA LEGEND

"I want to think I'm of value to the system and make it better," he says slowly. "I might only save one or two people out of 1,000. But, if I can, then I'm a winner."

Even tough guys cry

From Day One of prison life, inmates face routine and regimentation. Even the required blue-denim jeans that brand the wearer as serving time create similarity. Mr. Jeter, though, seeks out the individual. "The first thing, I try to find out who he is. I sit him down in front of me and want him to feel free to talk about anything. He can cry if he wants," Mr. Jeter explains. "Then, I try to find out his attitude—some of 'em don't even smile, you know. That's the way of life with them."

Leaning forward, lowering his voice, and lapsing once again into prison lingo, he continues: "What I'm saying is, you gotta take time with them. You learn to listen, let him explain how he feels. I'm knowin' he's going to take his best shot at me. I know he's going to run the con game at me. He's going to beat me if he can, 'cause that's his way of life. It's up to me to stop him. And when I find out who he is, I know how."

In prison industries, Mr. Jeter has the reputation of taking in the troublemakers, the problem inmates, the ones who can't get along, and turning them around. How he does it seems too simple.

"I tell him, 'Forget about my being a civilian and your supervisor,' " says Mr. Jeter. " 'We going to throw it out the winda.' Then I say, 'Now, look at it like this: Just two men sittin' down tryin' to solve a problem. And, I'm going to help you with it because I'm not here just drawin' a check from payday to payday. I'm concerned about you.' I've had the toughest ones cry."

James Dominick, imprisoned in 1978, has worked in the wood mill since July 1984. He describes Mr. Jeter's approach: "He takes his time to work with you instead of just putting you on a job. Mr. Jeter will be straight up with you. But, you got to be willing to learn in order to deal with Mr. Jeter."

"When you look at PI [Prison Industries] furniture, you're lookin' at Jeter, really. I have history."

—P. J. Jeter

Inmates grasp that lesson in the shop, where Mr. Jeter also ingrains the work ethic. "I let them learn that they have a responsibility to fill even though they're in here," he says. "And—because I know—once they get used to having that responsibility, they don't want to lose it."

The line that Mr. Jeter built

The vast Broad River Corrections Complex includes several separate prisons. Kirkland Correctional Institution, where Mr. Jeter heads the wood mill, translates to maximum-security detention. As its contribution to prison industries, Kirkland produces a line of office furniture, and offers furniture repair, stripping, and refinishing.

Kirkland Furniture includes exposed wood-frame chairs and settees, fully upholstered pieces, swivel desk chairs, side chairs, tables, and bookcases. And Mr. Jeter has had a hand in the design and production of every piece.

"When you look at PI [Prison Industries] furniture, you're lookin' at Jeter, really," he says matter-of-factly. "I have history."

Correctional officer Richard Pearson drops by to watch the sanding stage of a 250-chair refinishing job. Louis Evans listens to instructions from Mr. Jeter while Calvin McKnight, left, and Eric Council, right, continue work.

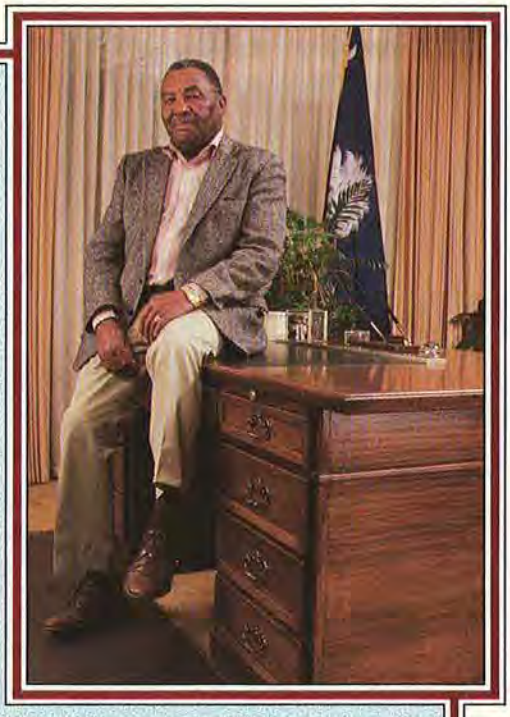
The history reaches back to what Mr. Jeter terms "The Company Days" of the 1940s, when the new inmate first encountered woodworking, and an influence that shaped his future.

"Captain George, with the Fiber Craft Company [a private firm that manufactured office and hotel furniture with prison labor], was the man who taught me," Mr. Jeter remembers vividly. "He told me one day—I was sandin'—'You look like you going to learn.' So, he put me on the chair-frame assembly line. He taught me how. Then, he moved me up."

Over a few years, the young inmate improved his skills and his understanding of the wood machining and assembly process. Eventually, Captain George saw the need for a major advancement, and announced, "I want you to put together a whole furniture suite, a new design. I said, 'I don't know about that,' but he said that I could do it. And, I was going to do it, or bust a gut!

"When he saw it put together, he told the president, 'He's ready. He's goin' to make you a good man.' Then, he put me as floorwalker over the whole shop—150–160 inmates without security! Captain George took a gamble, and he proved a point to society."

Over time, Mr. Jeter became a craftsman. Throughout his inmate years corrections commissioners called on him ("I want it built by Jeter") to handcraft desks, conference tables, entire offices, and to design new pieces of furniture to add to the production line. At the time of his parole, there was no one more experienced to supervise PI wood-furniture production. So, prison officials asked him to stay on—as a civilian.



"The Department of Corrections is proud to have an employee with the talents and experience of P.J. Jeter [*above*], and he's welcome to come in and show off my desk any time," says Corrections Commissioner Parker Evatt.

Prison industries: skills to take home

Although many state and federal correction programs have prison industries, South Carolina's dates back to 1868. Today, about 1,200 inmates work in South Carolina's PI, producing everything from furniture to cleaning chemicals, and providing services from bookbinding to telemarketing. Profits from sales, which totaled about $10 million in fiscal year 1989-90, help defray the cost of the state's correctional system. Working at jobs that develop skills, inmates can earn up to $50 per month.

Kirkland's wood mill usually employs 35 to 40 inmates. Administrators send men as needed to meet production. Woodworking skill isn't a prerequisite. "Some of my best men had never picked up a hammer in their life, never had a job," notes Mr. Jeter.

From basic techniques, such as sanding, the supervisor softly nudges his inmates through the steps to finished furniture. When he finds a mistake, he helps them unravel how it happened.

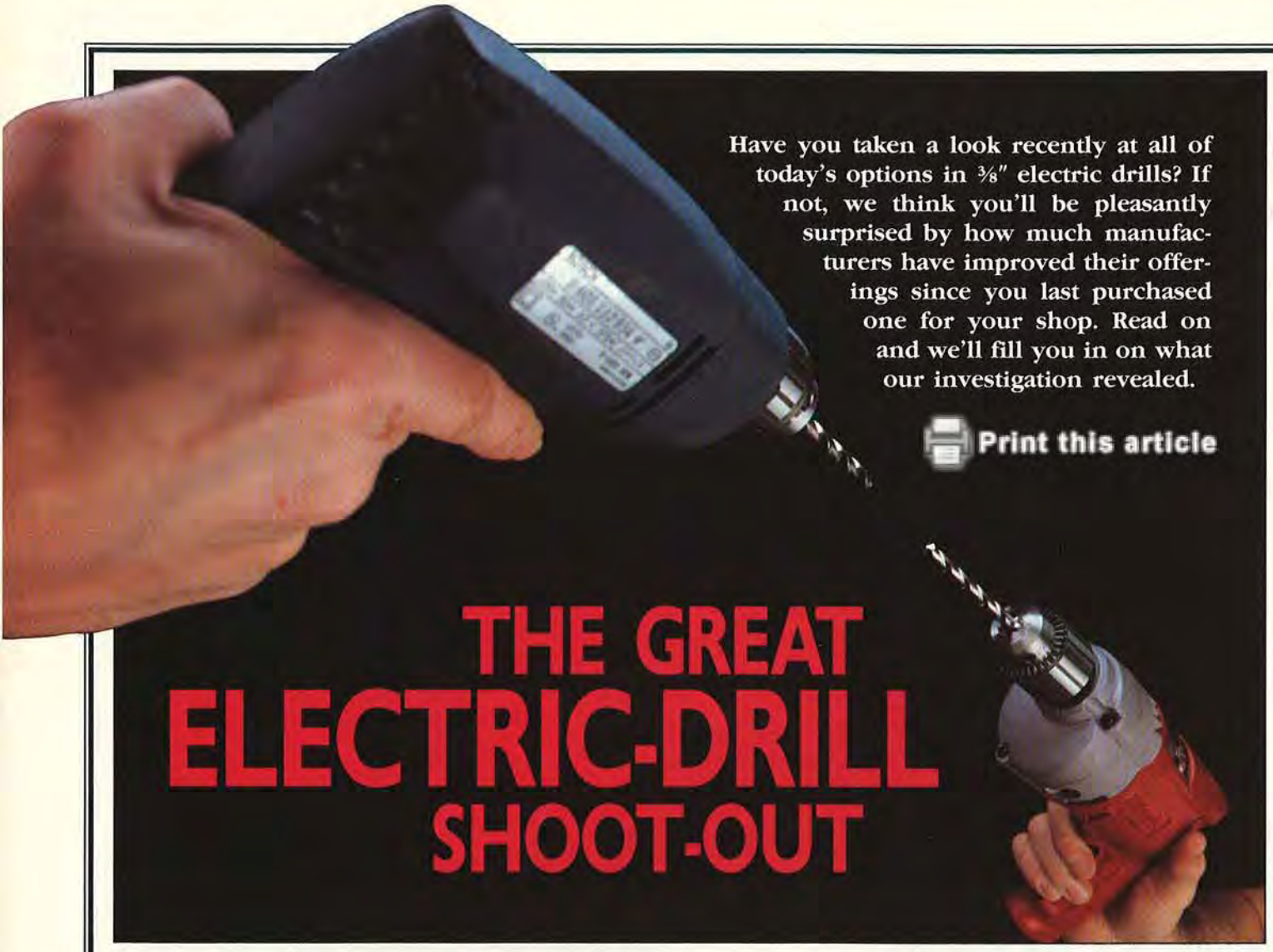
A chair frame that somehow doesn't square up turns out to have parts crosscut on a tablesaw with the blade not quite perpendicular. He shows the men how and where to check square, then has them take the chair apart. "They'll make new parts where needed and use the good ones. We don't waste wood," he says.

From a local restaurant, there are 250 chairs to be refinished a lighter color. What's the best way? Problem-solving becomes part of the learning process.

In the wood mill, Mr. Jeter repeats his experience, inmate after inmate. Among them, Gene Osborne has benefited.

"I been in here three and a half years, and in the wood mill about two years, eight months. I did some carpenter work when I was out on the street," he says, "but Mr. Jeter has taught me a lot about buildin' chairs and furniture, and it's really been a lesson. He's kind of hard to explain, though. He cooperates with you. He don't get all upset and cuss you out. He's understanding. Yet, he likes it done right."

Written by Peter J. Stephano
Photographs: Steve Uzzell



Have you taken a look recently at all of today's options in ⅜" electric drills? If not, we think you'll be pleasantly surprised by how much manufacturers have improved their offerings since you last purchased one for your shop. Read on and we'll fill you in on what our investigation revealed.

Print this article

THE GREAT ELECTRIC-DRILL SHOOT-OUT

For the past few years, the big news in portable drills has concerned cordless technology. Today, it's hard to find a woodworker who hasn't tried a battery-powered drill. And now that they have, most everyone agrees that these machines, although terrific for many applications, aren't the answer to every woodworking situation.

That's why for this report we decided to focus on the less glamorous, but certainly more powerful, ⅜" variable-speed, reversing (VSR) portable electric drill. And after testing 18 popular models in the $50–$150 price range from 11 manufacturers, we know two things for sure. First, these tools offer more torque than their cordless cousins, and they can give you the kind of quick, clean holes that cordless drills can't match. What's more, our tests revealed that a few electric models turn screws with as much control as highly regarded cordless models.

Drills with special talents

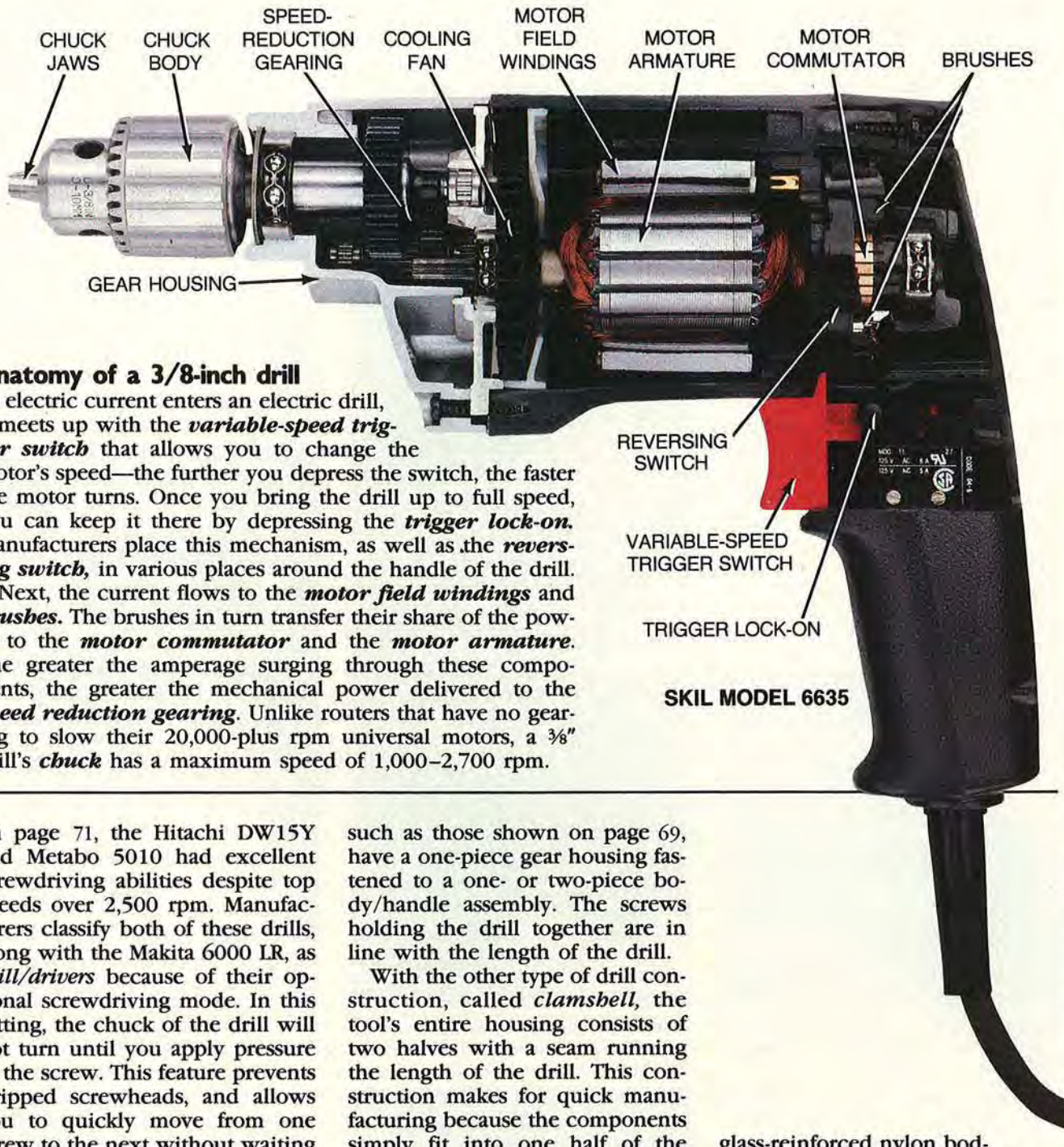
Although the ⅜" VSR drills covered in this article will handle most woodworking chores, we'd like to make you aware of a few other special-purpose drills:

- **½" Drills.** These machines have extra speed-reduction gearing to increase torque. This gearing makes the tool bulkier, but you'll appreciate its muscle when drilling ½"-and-larger holes in steel and 1"-and-larger holes in wood.
- **Hammer drills.** Available in ⅜" or ½" sizes, these drills have a jackhammer-like action for speedy holes in concrete.
- **Right-angle drills.** Ideal for tight spots, smaller versions of this tool work well for power-sanding the inside of turned bowls.

Speed, torque, and other driving concerns

As we discovered in our tests, the drills with top speeds in the 1,000–1,300 rpm range performed a greater variety of tasks with more ease than those with top speeds over 2,000 rpm. The slower drills have more torque for jobs with big bits or hard material.

Also, the slower drills tended to ease gradually into their lowest speeds, making screwdriving a breeze. The faster drills tended to jerk on start-up, making screwdriving a hairy experience. However, there were two exceptions to this rule. As shown in the chart



Anatomy of a 3/8-inch drill

As electric current enters an electric drill, it meets up with the ***variable-speed trigger switch*** that allows you to change the motor's speed—the further you depress the switch, the faster the motor turns. Once you bring the drill up to full speed, you can keep it there by depressing the ***trigger lock-on.*** Manufacturers place this mechanism, as well as the ***reversing switch,*** in various places around the handle of the drill.

Next, the current flows to the ***motor field windings*** and ***brushes.*** The brushes in turn transfer their share of the power to the ***motor commutator*** and the ***motor armature.*** The greater the amperage surging through these components, the greater the mechanical power delivered to the ***speed reduction gearing***. Unlike routers that have no gearing to slow their 20,000-plus rpm universal motors, a ⅜" drill's ***chuck*** has a maximum speed of 1,000–2,700 rpm.

on page 71, the Hitachi DW15Y and Metabo 5010 had excellent screwdriving abilities despite top speeds over 2,500 rpm. Manufacturers classify both of these drills, along with the Makita 6000 LR, as *drill/drivers* because of their optional screwdriving mode. In this setting, the chuck of the drill will not turn until you apply pressure to the screw. This feature prevents stripped screwheads, and allows you to quickly move from one screw to the next without waiting for the chuck to stop spinning.

Tool construction dictates durability and accuracy

Let's face it: Some of us pamper our tools while others pay them little respect. If you fall into the latter group, look for a drill with *inline* construction. Inline drills, such as those shown on page 69, have a one-piece gear housing fastened to a one- or two-piece body/handle assembly. The screws holding the drill together are in line with the length of the drill.

With the other type of drill construction, called *clamshell,* the tool's entire housing consists of two halves with a seam running the length of the drill. This construction makes for quick manufacturing because the components simply fit into one half of the "shell," then the other half screws into place on top. Most drills under $70, such as those on page 70, have clamshell assembly. Although fine for the light user, these housings don't hold up to heavy-duty drilling.

Regardless of construction, nearly all of today's drills have glass-reinforced nylon bodies and handles to lighten the tool and electrically insulate it. However, plastic's advantage ends when it comes to gear housings. Generally available only on drills over $100, aluminum gear housings hold the gears and chuck in more-rigid alignment and contribute to the tool's durability.

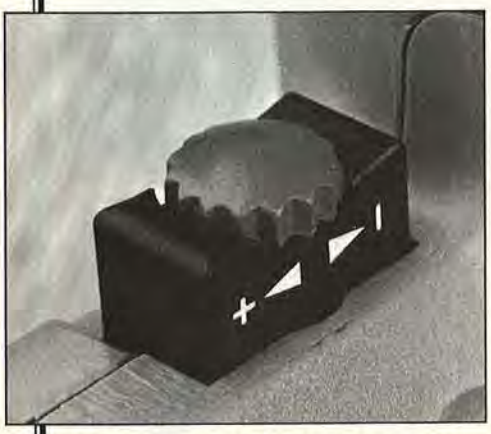
Continued

DRILLS

Switches: more choices than just ON/OFF

Similar to a hammer, a drill should feel like a natural extension of your hand. So, all three switch mechanisms—ON/OFF, trigger lock-on, and reversing switch—should operate smoothly and conveniently without slowing you down. Here's what we uncovered after hundreds of switch squeezes, pushes, and flips.

• ***Trigger switch.*** About one-third of the tested drills have dials on the trigger that allow you to set the maximum depth to which you can squeeze the trigger, thereby limiting the top speed. Despite its uncomfortable feel, we found this feature useful for maintaining steady, slower speeds. We recommend click-stop dial triggers such as the one on the Hitachi DW 15Y shown *below.* The click stops help prevent accidental dial rotation. We also like Hitachi's "plus" and "minus" speed symbols.



▲ **Hitachi's model DW 15Y features a click-stop dial trigger to help you conveniently set the top speed.**

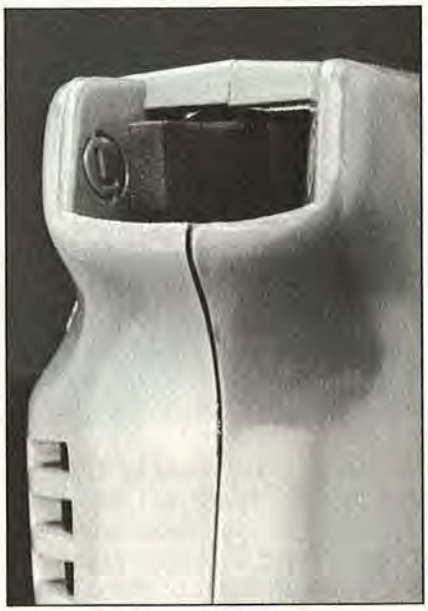
• ***Trigger lock-on.*** For extended drill operation, you'll appreciate a trigger lock-on button. We found this feature on every drill except the Porter-Cable 666. Since most manufacturers place this button on the left side of the handle, left-handers will prefer a drill with a recessed button. Why? As you can see in the photo *middle, top,* wrapping your left hand around the handle of a drill with a protruding lock-on button invariably pushes in the button. The result: accidental locking of the trigger.

We were disappointed that none of the models in our test could be locked at a speed slower than the top speed. For woodworking tasks such as applying wax, polishing surfaces, or wire brushing, it would be nice to lock the drill at an intermediate speed.

▲ **Gripping a drill firmly with your left hand invariably depresses a protruding trigger lock-on button.**

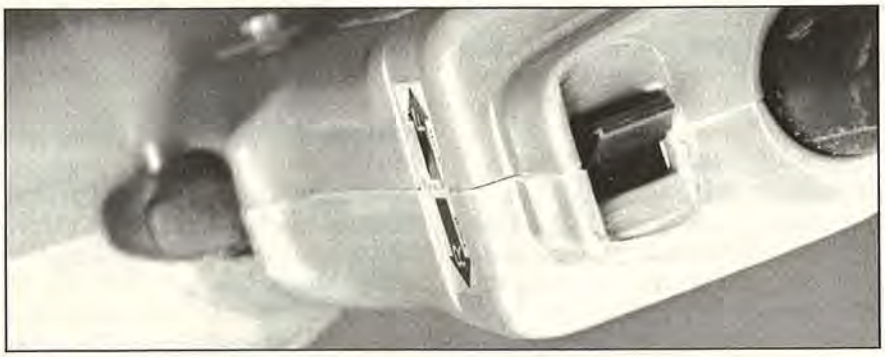
▲ **Milwaukee's 0228-1 has its reversing switch above the trigger—a position *WOOD* staff members prefer.**

• ***Reversing switch.*** Manufacturers place this switch in one of three places: above the trigger, or at the bottom or top of the handle as shown in the photos *below* and *below, left.* Frankly, we had a hard time making up our minds about the best position of this switch. Most *WOOD*® magazine staff members prefer the above-the-trigger position for speedy changes. But, a vocal minority of the staff swears that this positioning leads to accidental changes and like the top-of-handle position. We didn't find anyone in favor of a reversing switch at the bottom of the handle.



▲ **You'll find the reversing switch on the Hitachi D 10V1 at the top of the handle—convenient for some users.**

▼ **We found bottom-of-handle reversing switches inconvenient, such as the one on the Makita 6510.**



Belt clips: Side-mounted varieties work best

Any type of belt clip comes in handy, but one kind makes a lot more sense than the others. As shown *below,* Hitachi's belt clip mounts to the side of the tool, so the drill clips to your belt in a comfortable position. All the other belt clips we ran across were mounted to the top of the tool, leaving the handle of the drill pointing away from your body.

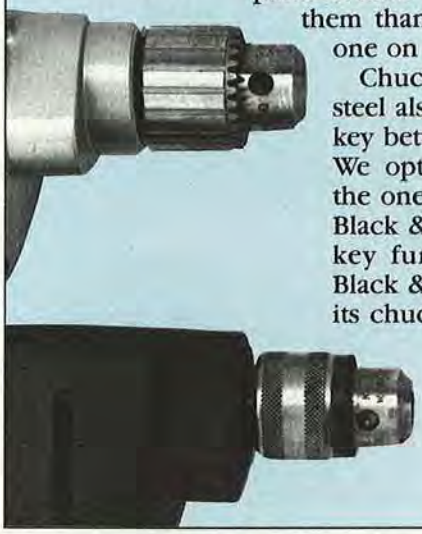
The Hitachi D 10V1 has a convenient side-mounted belt clip. Top-mounted belt clips leave the tool sticking out from your body.

Chucks: Beefiness counts where drill meets bit

Some easy-to-see qualities separate good chucks from so-so ones. For a slightly higher price, manufacturers outfit their better drills, such as the Skil model 6635 shown *below*, with chuck bodies made of machined steel. These beefy components have less play in them than stamped-steel chucks such as the one on the Skil 6523 shown at *left, below.*

Chucks made completely of machined steel also have larger teeth, which grip the key better and make for easier bit changes. We opt for large, T-shaped keys such as the one shown *above* that comes with the Black & Decker 1166. The small, L-shaped key furnished with the less expensive Black & Decker 7193 slipped easily out of its chuck and provided little leverage.

We prefer large, T-shaped chuck keys such as the one supplied with the Black & Decker 1166.



For a few dollars more, the Skil 6635 at *top left* offers a machined-steel chuck and aluminum gear housing. The lower-priced Skil 6523 at *left* has a stamped-steel chuck and plastic gear housing.

Gripping concerns: handles, balance, weight, and size

Like gloves, drill handles vary greatly in size and texture, so you really have to walk into a store and put a drill in your hand before you know how it fits.

If you're like us, you'll like the feel of textured handles over smooth, slick ones. One of our favorites was the Black & Decker 1166 shown on page 70. The tiny bumps covering the sides of the handle felt comfortable and improved our grip.

We also prefer handles that we can wrap our fingers around, such as the Porter-Cable 666 shown *below right.* The P-C 621 shown just above the model 666 had the fattest handle of all the models tested, and only the largest of hands can get a hold on this drill. The P-C 666 also has a big advantage in balance over most conventionally designed drills, thanks to its T-handle shape. We found that front-heavy drills fatigued our hands when held in a horizontal position.

However, most any drill can tire your hand if you hold it in one position long enough, so size and weight must figure into your buying decision, too. Of the drills we tested, the Bosch 9164 shown on page 70 offered the best combination of power (3.7 amps) and compactness. At 3.2 pounds, it was among the lightest machines in our test, and it was the only drill less than 8" long.

The T-handled Porter-Cable 666 has a balance-and-gripping advantage over the P-C 621.

Continued

DRILLS

Seven good drills in three price ranges

• **Under $70:** Selling in the $65–$70 range, the Black & Decker 1166, Bosch 1158, and Makita 6404 (shown at *right*) don't have tremendous torque, but they will handle most wood-boring tasks. If you don't rely on your electric drill for turning screws, one of these models will perform well.

With a $62 price tag, the Sears 10403 has inline construction, aluminum gear housing, and we rated its screwdriving ability "excellent." However, this 5.4-pound drill might be too bulky for some.

• **$70–$100:** Most drills in this price range have a gearing system that allows the chuck to be positioned close to the top of the housing. You'll appreciate this feature when you're trying to drill a 90° hole as close as possible to a corner. Although neither the Hitachi D 10V1 or Makita 6510 LVR shown at *below right* draw more than 3.5 amps, both have good torque and screwdriving ability.

• **Over $100:** The Bosch 9164 and Milwaukee 0224-1 shown on page 66 get our vote for having plenty of power and features packed into their well-constructed housings. Appropriately named the "Mighty Midget" by Bosch, the 9164 has a permanent-magnet motor that turns slower than a standard universal motor, so it requires less gearing. The 9164 pulses out a smooth, consistent stream of power, and was the smallest drill tested.

With 5.4 amps of muscle behind it, the Milwaukee 0224-1 pours forth a steady stream of torque, but at 4.7 pounds, it could cramp your hand after extended use. We liked the Milwaukee's accessible brushes and detachable cord for quick, hassle-free repairs. All the other drills in our test require disassembly for brush and cord replacements.

Written by Bill Krier
Technical Consultant: Bob Yapp
Photographs: Bob Calmer

We rate these drills as good buys under $70: from *top,* Makita 6404, Black & Decker 1166, and Bosch 1158.

The Hitachi D 10V1 and Makita 6510 LVR performed well in our tests among $70- to $100-priced drills.

TELLING SPECS. ON 3/8" DRILLS

MANUFACTURER	MODEL NO.	TYPE[1]	TOP SPEED (RPM)[2]	AMPS	SWITCHES: LOCATION OF REVERSING SWITCH[3]	SWITCHES: LOCKING SWITCH TYPE[4]	SWITCHES: VARIABLE SPEED SWITCH TYPE[5]	SWITCHES: LENGTH (INCHES)	BODY MATERIAL[6]	CHUCK: KEY SHAPE	CHUCK: TYPE[7]	CONSTRUCTION: GEAR CASE SHELL MATERIAL[8]	CORD LENGTH (FEET)[9]	FEATURES: BELT CLIP TYPE[10]	FEATURES: SIDE HANDLE[11]	FEATURES: SCREW-DRIVING CAPABILITY[12]	WEIGHT (LBS)	COUNTRY OF ORIGIN[13]	LIST PRICE	SELLING PRICE[14]
AEG	BE 8RL	D	2,200	3.8	AT	SH	T	10	SS	T	CS	GN	10	N/A	N/A	F	3	WG	$109	$80
Black & Decker	7193	D	2,500	3.5	AT	BT	T-D	9¾	SS	L	CS	GN	6	N/A	N/A	F	3.7	US	100	70
	1166	D	2,500	4	AT	BT	T	9⅝	MS	T	CS	GN	8	N/A	N/A	G	3.7	US	100	70
	1180	D	1,200	5	AT	BT	T	9¾	MS	T	IL	A	8	N/A	N/A	G	4.5	US	182	130
Bosch	1158	D	2,100	2.8	AT	SH	T	10	SS	T	CS	GN	6½	N/A	O	G	3.2	S	99	70
	9164	D	1,000	3.7	AT	SH-R	T	7¾	MS	T	IL	GN	7	N/A	O	E	3.2	US	169	105
Hitachi	D 10V1	D	1,100	3.3	TH	SH	T-DC	9⅞	MS	T	IL	GN	8½	S	N/A	E	3.3	J	148	100
	DW 15Y	D/D	2,600	3.3	TH	SH	T-DC	10	MS	T	IL	A	8½	S	S	E	3.5	J	269	140
Makita	6404	D	2,100	2.8	AT	SH	T-D	9⅜	MS	T	CS	GN	6	T	N/A	G	3.1	US	102	65
	6510 LVR	D	1,200	3.5	BH	SH	T	9½	MS	T	IL	GN	8½	T	N/A	E	3.3	J	153	90
	6000 LR	D/D	1,300	3.5	BH	SH	T	10¼	MS	T	IL	A	8½	T	S	E	4.2	J	243	150
Metabo	5010	D/D	2,700	4	AT	BH	T-DC	10¼	SS	T	CS	GN	14½	N/A	N/A	E	3.5	WG	163	130
Milwaukee	0228-1	D	1,000	3.5	AT	SH-R	T	9¼	MS	T	IL	A	8	T-O	N/A	G	3.7	US	154	100
	0224-1	D	1,200	5.4	AT	AT	T	10½	MS	T	IL	A	8 or 25**	N/A	O	E	4.7	US	179	120
Porter-Cable	621	D	1,200	4	AT	SH-R	T	8½	MS	T	IL	A	10	N/A	N/A	G	3.7	US	148	100
	666	D	1,200	4	AT	N/A	T	9½	MS	T	IL	A	7	N/A	N/A	G	4	US	181	120
Ryobi	D-1010	D	1,300	3.3	BH	SH	T	9⅝	MS	T	IL	A	6½	T	S	F	3	J	179	125
	D10PVR	D	1,200	3.2	AT	SH	T-D	9⅝	SS	T	IL	GN	6½	T	O	F	3.1	J	113	75
Sears	10403	D	1,200	3	AT	SH	T-D	10	MS	T	IL	A	10	N/A	S	E	5.4	US	—	62
	27102	D	1,200 2,500*	4.5	AT	BT	T	11	MS	T	IL	A	8	N/A	N/A	G	4.4	US	—	111
Skil	6523	D	2,500	3.5	SB	SH	T	10	SS	T	IL	GN	8	N/A	N/A	F	3	US	127	100
	6635	D	1,200	5	SB	SH	T	10	MS	T	IL	A	8	N/A	S	G	3.7	US	178	130

N/A Not available

1. (D) Drill; (D/D) Drill/driver.

2. * Dual-speed ranges.

3. (AT) Above trigger; (BH) Bottom of handle; (SB) Side of body; (TH) Top of handle.

4. (AT) Above trigger; (BH) Bottom of handle; (BT) Below trigger; (SH) Side of handle; (SH-R) Side of handle-recessed.

5. (T) Trigger; (T-D) Trigger with dial; (T-DC) Trigger with click-stop dial.

6. (MS) Machined steel; (SS) Stamped steel.

7. (CS) Clamshell; (IL) Inline.

8. (A) Aluminum; (GN) Glass-filled nylon.

9. **Interchangeable cords.

10. (S) Side-mounted; (T) Top-mounted; (T-O) Top-mounted, optional.

11. (O) Optional; (S) Standard.

12. (E) Excellent; (G) Good; (F) Fair.

13. (J) Japan; (S) Switzerland; (US) United States; (WG) West Germany.

14. Selling prices based on advertisements, catalogs, and dealer inquiries at time of article's production.

MANUFACTURERS LISTING

AEG
203/447-4600

Black & Decker
301/239-5300

Bosch
Look in your Yellow Pages under "tools"

Hitachi
404/925-1774

Makita
714/522-8088

Metabo
215/436-5900

Milwaukee
414/781-3600

Porter-Cable
901/668-8600

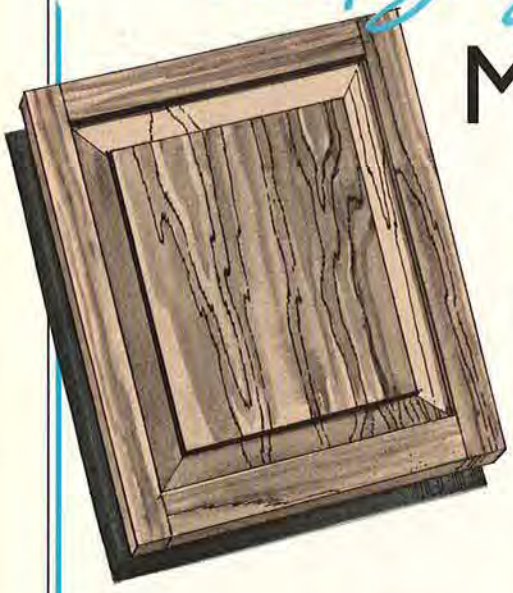
Ryobi
803/226-6511

Sears
Call your nearest store

Skil
312/286-7330

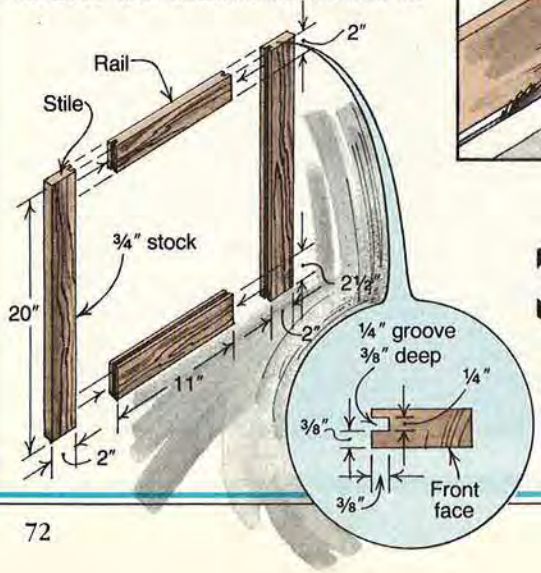
Print this article

MAKE RAISED PANELS



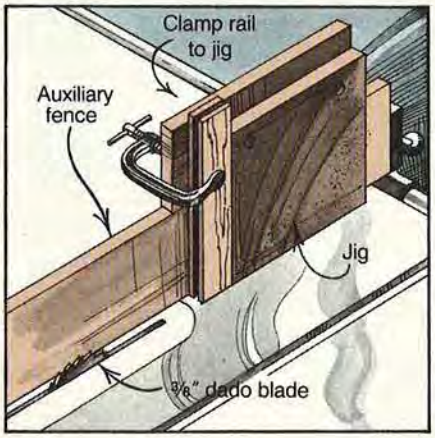
Raised panels with only a tablesaw? Absolutely! Contrary to what some woodworkers believe, you don't have to own a router, shaper, or a lot of fancy cutters to make 'em. Just follow these simple steps for building a simple, yet attractive, flush-fitting door.

1 First, you'll need to construct the door frame from ¾" stock. Start by determining the outside dimensions of the door. Typically, a door about this size has 2"-wide stiles and top rail, and a 2½"-wide bottom rail. Now, subtract the combined widths of the stiles from the width of the door to determine the length of the rails. As shown in the drawing *below left,* our sample door has 11"-long rails and 20"-long stiles.

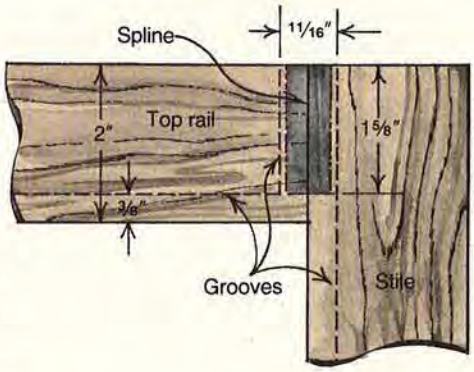


2 After cutting the rails and stiles to size, select your ¼" plywood spline stock. We prefer fir plywood because we've found that it's consistently uniform in thickness.

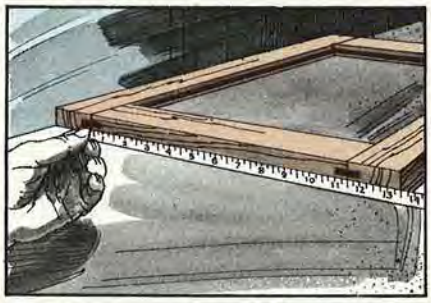
Now, with a dado blade, cut a ¼" groove, ⅜" deep into a piece of scrap, and test the spline for a tight fit. Adjust the width of the cut as necessary. For the upcoming groove cuts, keep the face side of the frame pieces against the fence. Set your rip fence ⅜" from the blade and cut a ¼" groove, ⅜" deep along the inside edges of the rails and stiles and the ends of the rails where shown. Using the setup *below,* cut the groove in the rail ends.

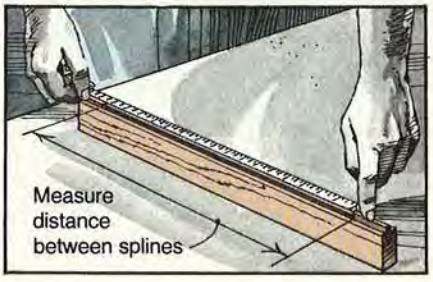


3 To cut the splines to the proper size, take a look at the drawing *above right,* and follow these steps: First, rip the spline stock to a width that's 1⁄16" less than the combined depths of two grooves. For our ⅜"-deep grooves, we cut the spline stock 11⁄16" wide. To cut the splines to length, subtract the depth of one groove from the width of the rails. For example, to join our top rail to the stiles, we needed two splines, each 1⅝" long. The bottom rail required two 2⅛"-long splines.



4 You're almost ready to make the raised panel, but first you must determine its size. First, dry-fit the frame and measure the distance from the far end of one spline to the far end of the other along the width of the

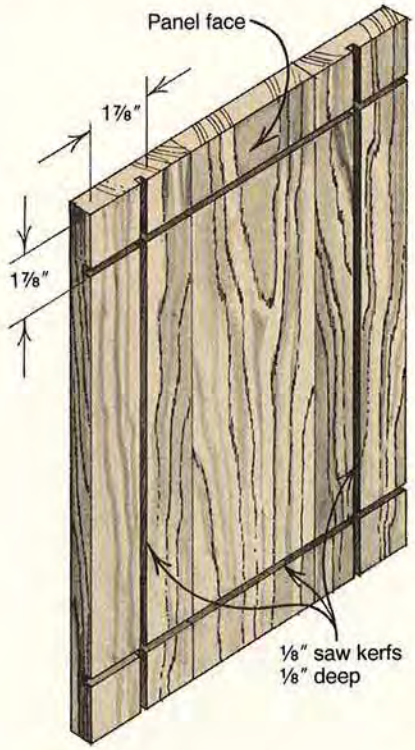




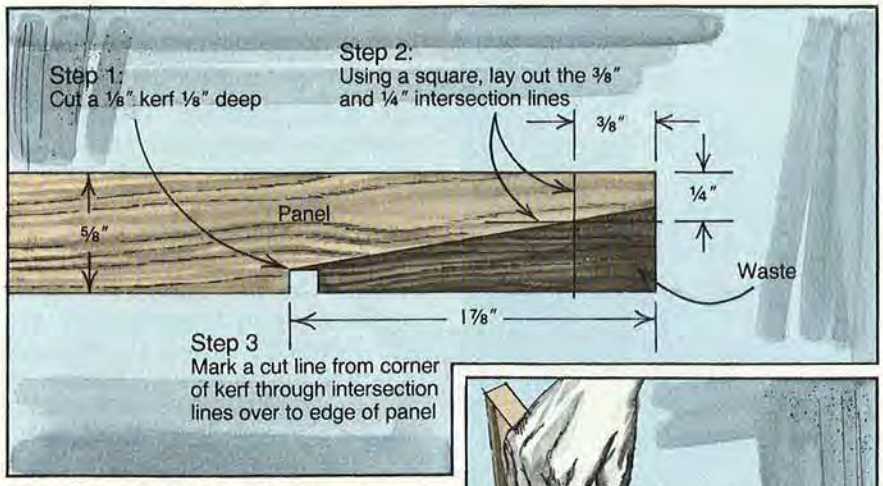
WITH YOUR TABLESAW

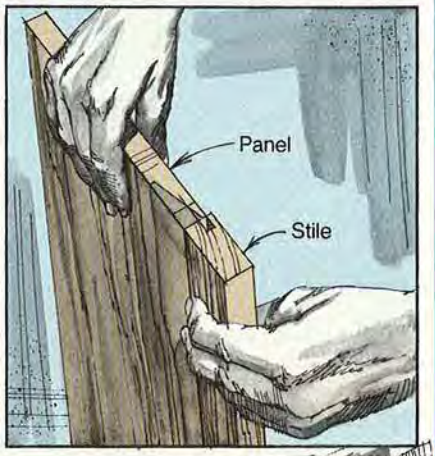
frame as shown *below left.* From this figure, subtract 3/32" for expansion, which gives you the panel's width. To judge the panel's length, disassemble the frame and measure the distance between the stile splines as shown *below left,* and subtract 3/32".

5 To make the panel, first resaw or plane a piece of 3/4" stock to 5/8". Then, edge-join three or more pieces of this stock and cut the panel to size. Set your fence 1 3/4" from the blade and make 1/8" kerfs, 1/8" deep along all four sides of the panel's face.

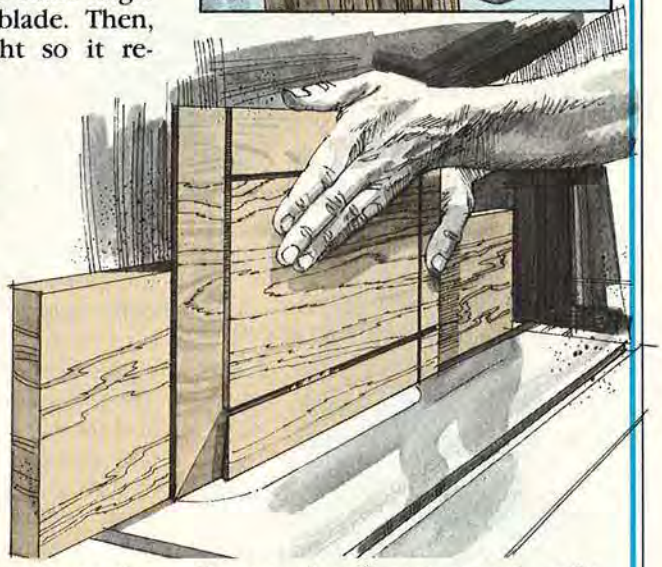


6 Next, lay out the profile of the raised panel's beveled border along one edge of the panel as shown *above right.* To check your layout, hold the edge of one of the frame pieces against the panel edge as shown at *right.* The panel edge should be slightly oversized so that it fits snugly after you sand it.





7 Now, set a T-bevel according to the angle of the beveled border and use the T-bevel to duplicate the same angle on your tablesaw's blade. Then, set the blade's height so it removes all the material up to the 1/8" kerfs in the panel's face. As you make the cut, hold the panel firmly against the auxiliary wood fence as shown at *right.* Move the panel through the blade at a consistent speed.



8 With a hardwood sanding block, sand away any saw marks on the beveled border, and dry clamp the door to check for fit. Remember to stain and seal the panel *prior* to assembling the door. This way, any seasonal contraction of the panel will not reveal unfinished areas. Then, glue together the assembly and sand the frame pieces flush. Finish-sand the frame, stain the rest of the door, and apply your finish.

Illustrations: Kim Downing; Jim Stevenson

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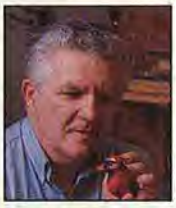
CARVE A

OKLAHOMA CARVER LINDEL PORTER



By day, Lindel Porter, right, directs the respiratory therapy program at Tulsa City College, but at day's end he heads for his workshop. There, he carves eagles, waterfowl, and songbirds. And, when he's not carving, he's watching.

"I study the birds that come to the bird feeder. But, I enjoy the cardinals best. They light up our landscape."

Buying Guide

- Pewter feet, 7mm glass eyes, $8 ppd. (U.S.), from: *Little Mountain Carving Supply, Rte. 2, Box 1329, Front Royal, VA 22630. Free catalog. 800-752-7573 or 703/636-3125.*

Section your bird

"To resist breakage, I carve the cardinal's head, tail, and body separately," notes Lindel. Following the grain directions shown at *right,* bandsaw the head, tail, and body from a 2×2×8″ basswood block. "On the bandsaw, notch out the pointed feathers at the rear [see side view]. Leave them ¼″ thick for detailing," he says.

Shape up the body first

With a knife, a No. 3 or 5 gouge, or a power-carving bit, round the body to the neck-joint. Next, outline the feather pattern with a knife or V-tool, undercutting each feather so that it stands out from the body, as in detail photo, *right.* Next, round the feathers off slightly so they conform to the body, then detail the quills and barbs.

Attend to the head

Round and shape the head. Then, define the bill's outline. "Use undercuts to slightly recess the lower bill and a tiny V-cut for the nostrils," says Lindel. Mark eye locations, and with a ⅜″ bit drill sockets ⅛″ deep.

Carve the area to be joined to the body so that the two pieces come together cleanly. "Make the bird more lifelike," suggests the craftsman, "by tilting the head." Then, glue the head to the body and let dry. For hidden joints, Lindel cuts a shallow, V-shaped trough on the glue lines, fills it with wood putty, then, after it dries, sands the joint to blend with the wood.

Mount 7mm glass eyes (see the Buying Guide) in the head by first filling the sockets with soft wood putty. Push the eyes about one-third their diameter into the putty, then shape the squeeze-out to form upper and lower eyelids. If you don't shape eyelids, the eyes will look too large.

Tarry on the tail

For realism, the tail must fan out and curve—like a sail filling with wind. "Hollow the underside of the tail," instructs the carver. "Then, trace the feather pattern, undercut and round them, and detail the quills and barbs."

Join the tail to the body by cutting a slot to match tail width and curvature in the underside of the rear body. Dry-fit the parts, then glue in place. "Strengthen the joint by drilling a ⅛″ hole through the tail and into the body to fit a ⅛″ dowel," says Lindel. "Dip the dowel in glue and then push it in place."

Wet-on-wet for natural color

"I use arcylics," says Lindel, "and first I paint on a base coat of three parts Gesso [a thickening medium] to one part burnt umber and one part mars black. I thin this wash to a milklike consistency." To duplicate Lindel's wet-on-wet painting technique, which allows details to show through, thin your colors or mix of colors to wash-consistency, then paint them on coat by coat until you've built up the color saturation you want. Refer to the color key *above right.*

Get the cardinal on its feet

To attach the pewter feet (see Buying Guide), drill ⅛″ holes in the body where shown. Dip the feet-insertion wires in glue and insert in the holes. Paint after the glue dries, then mount by inserting the short pegs on the feet into holes drilled in a piece of branch. Add a base.

Drawings: Jim Stevenson Photographs: John Heatherington; Bob Hawks

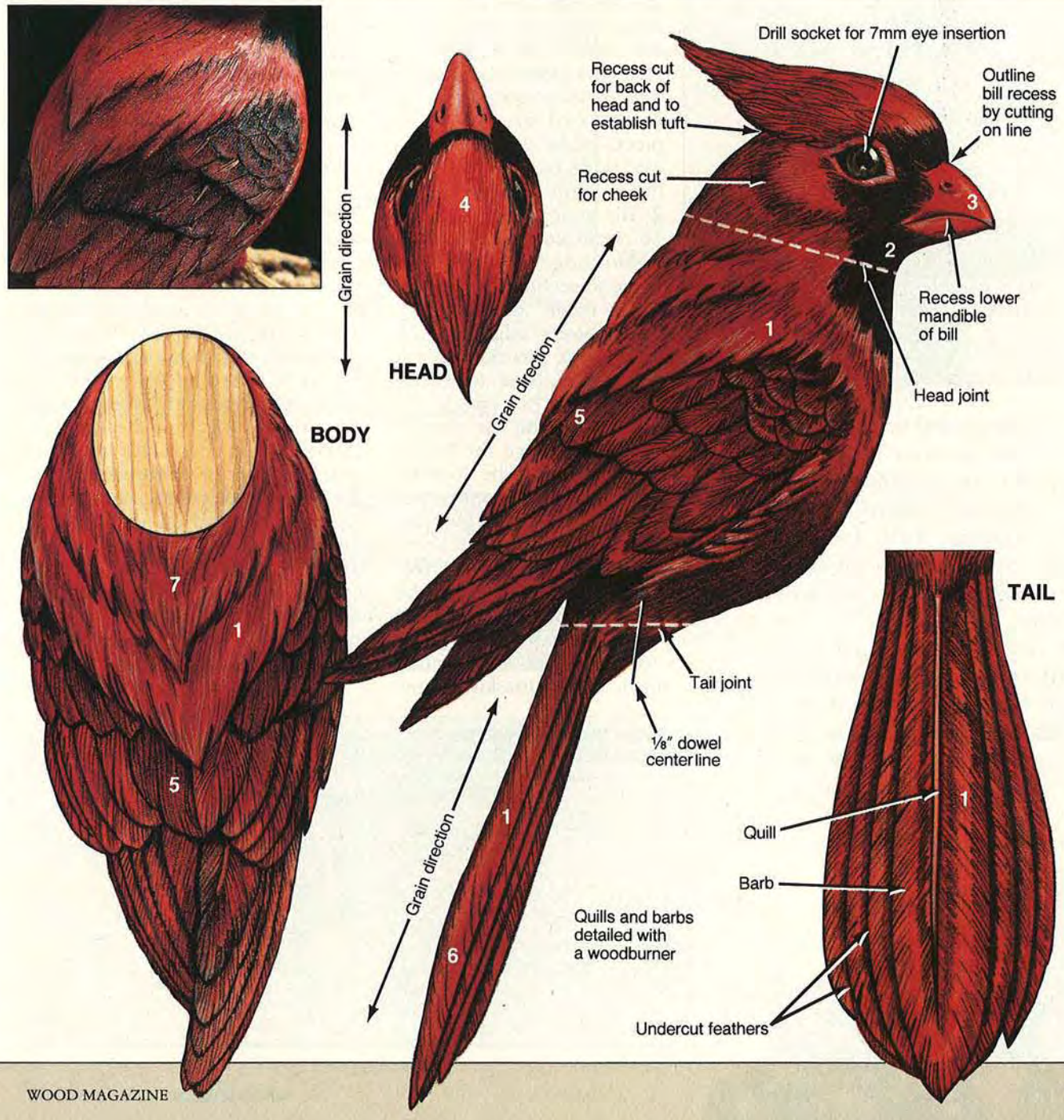
CARDINAL

CAPTURES AN AMERICAN BEAUTY

COLOR KEY

1. *Red shaded areas*—cadium red dark
2. *Black areas*—3 parts mars black to one-half part thalo blue
3. *Beak*—cadium red light and cadium yellow medium
4. *Top of head*—cadium red light highlighted by cadium yellow light
5. *Back*—one part cadium red dark to 1/16 part thalo blue
6. *Body and feather highlights*—cadium red light
7. *Back and underside*—cadium red medium to cadium red light to cadium yellow light

Pewter feet (not on pattern)—yellow ochra, titanium white, burnt umber



FINE-FEATHERED-

A CONTEMPORARY DESIGN THAT CAN

I was astounded last fall while scouting garden stores for bird feeders. As you've probably noticed, run-of-the-mill bird feeders, built from ½" cedar and stapled together, run short on design and practicality. Yuck!

I think you—and your feathered friends—will like this hexagonal feeder. It holds a whopping 10 pounds of seed and features a large 15"-diameter feeding tray.

Marlen Kemmet
How-to Editor

Start with the hexagonal column

Note: We used ¾" cedar for our bird feeder; redwood also would work. If you select ¾" cedar, it will have one rough side. You can either plane or belt-sand the rough side smooth. For joints that will stand up to the extremes of Mother Nature, use either slow-set epoxy or resorcinol glue.

1 Rip and crosscut six pieces of ¾"-thick cedar to 4½" wide by 18½" long for the column sections (A).

2 Tilt your tablesaw blade 30° from vertical. Bevel-rip *one* edge of each column section. Reposition the fence, and bevel-rip the opposite edge of each for 4"-wide pieces. (We cut scrap stock first to check for accurate 30° cuts.)

3 Lay out a notch on the bottom end of each piece. See the Notch Detail accompanying the Exploded-View Drawing for reference. Cut the notches to shape (we cut ours on the bandsaw).

4 As shown in Step 1 of the two-step drawing *below,* position the column sections with the beveled edges facing down. Butt the pieces together with the notched ends flush. Using masking tape, join the six pieces. In addition to holding the pieces together, the tape prevents the adhesive from squeezing out onto the column exterior. Flip over the assembly and apply adhesive to the mating edges. (We used a small brush to completely coat both surfaces of each joint with epoxy.)

5 As shown in Step 2 of the drawing, roll the column assembly together, tape the remaining joint, and secure the column with band clamps. Let the epoxy cure. Then, remove the band clamps and tape. Sand the column smooth.

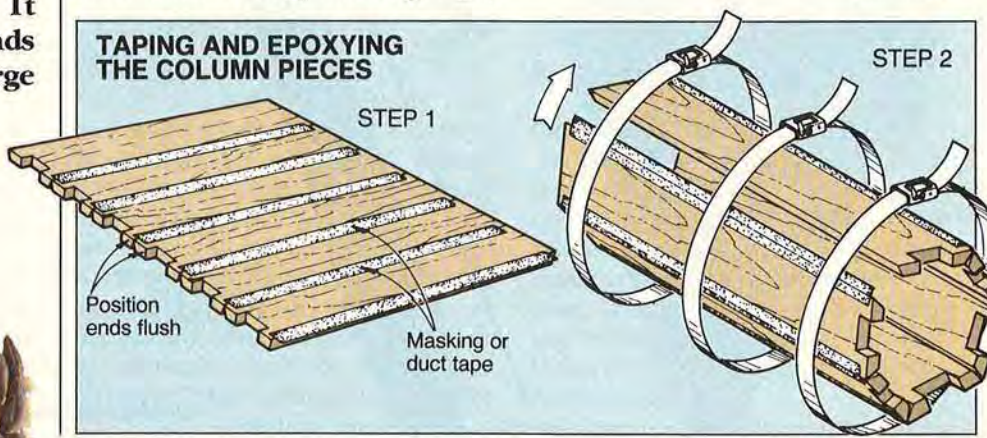
The sloped roof comes next

Note: For tight joints on the sloped roof, we found it helpful to use an adjustable triangle to set our miter-gauge and saw-blade angles. See the Buying Guide for our source of this handy shop aid.

1 Cut a piece of ¾" cedar to 9¼ × 48". Following the three-step drawing at *right,* cut the six roof pieces (B) to shape. See the Cutting Diagram for reference.

2 Position three of the roof pieces together, topside up (bevels facing *down*), and run masking or duct tape across the two joints. Carefully flip over the assembly and apply epoxy to the mating bevels. Now, pull the opposite ends together by running a piece

Continued



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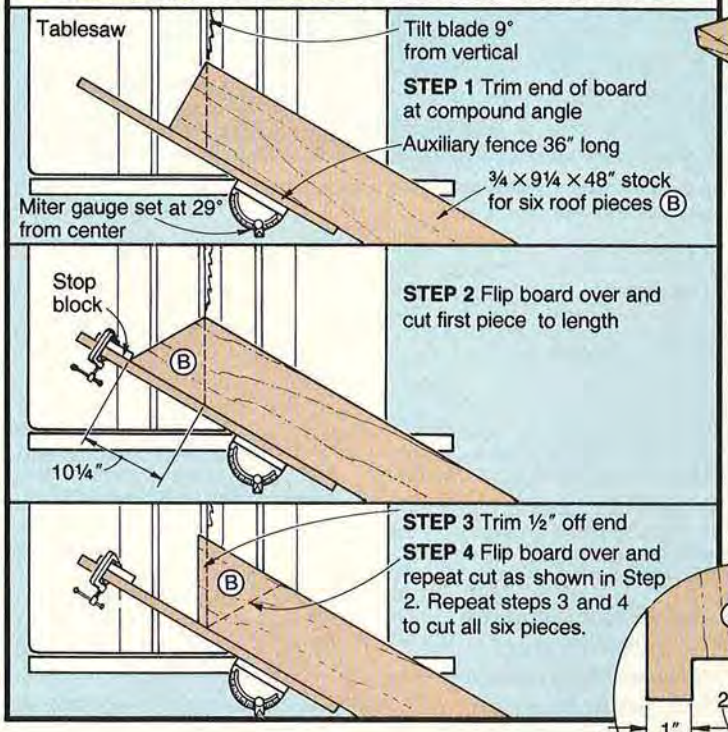
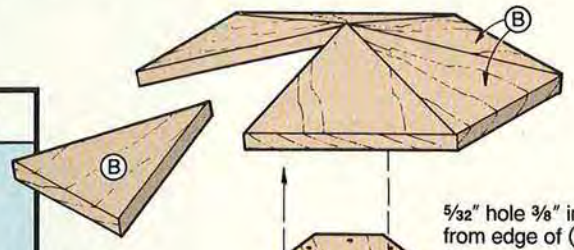
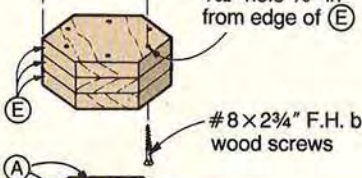
-FRIEND FEEDER

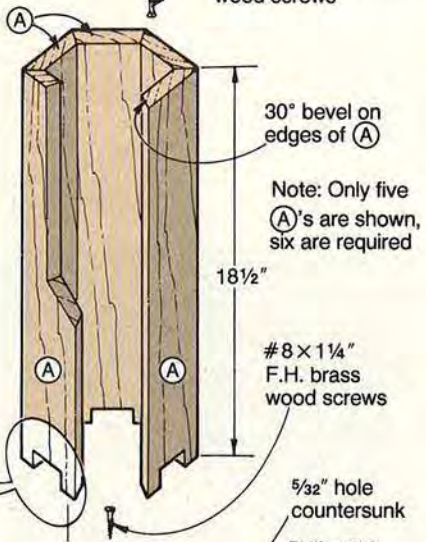
FEED A FLOCK

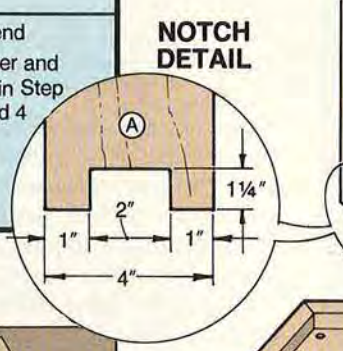
CUTTING THE ROOF PIECES TO SHAPE

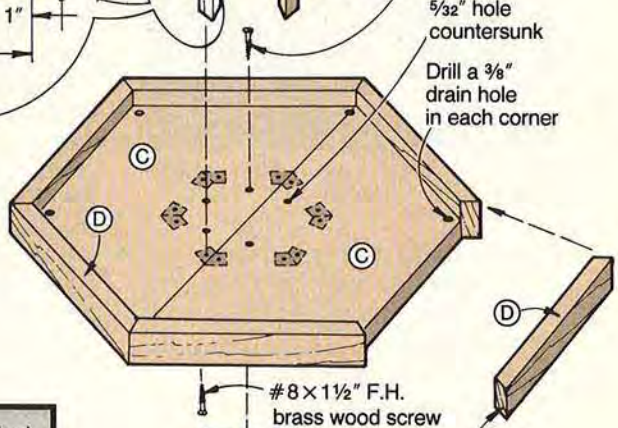

Tablesaw
Tilt blade 9° from vertical
STEP 1 Trim end of board at compound angle
Auxiliary fence 36" long
¾ × 9¼ × 48" stock for six roof pieces (B)
Miter gauge set at 29° from center
Stop block
B
10¼"
STEP 2 Flip board over and cut first piece to length
STEP 3 Trim ½" off end
STEP 4 Flip board over and repeat cut as shown in Step 2. Repeat steps 3 and 4 to cut all six pieces.

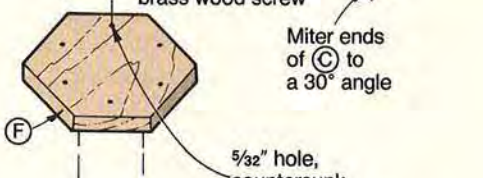


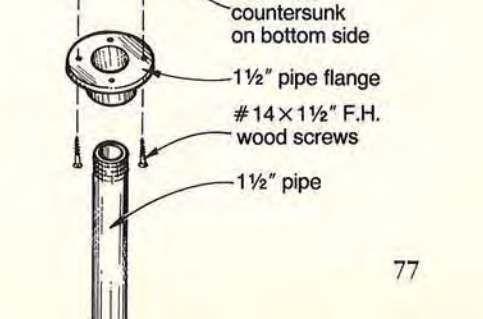




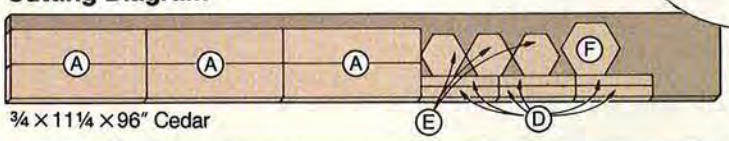




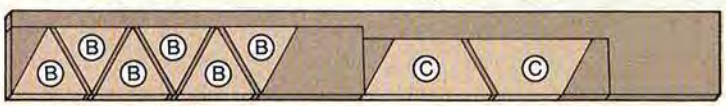




Cutting Diagram



¾ × 11¼ × 96" Cedar



¾ × 11¼ × 96" Cedar

Bill of Materials

	Part	Finished Size* T	W	L	Matl.	Qty.
A*	column pieces	¾"	4"	18½"	C	6
B*	roof pieces	¾"	9¼"	10¼"	C	6
C*	seed-tray pieces	¾"	7½"	17¼"	EC	2
D	banding	¾"	1½"	9½"	C	6
E	roof supports	¾"	5⅜"	6¼"	C	3
F	seed-tray support	¾"	7"	8"	C	1

*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

Material Key: C-cedar, EC-edge-joined cedar

Supplies: slow-set epoxy or resorcinol glue, waxed paper, masking tape, #8 × 1¼" flathead brass wood screws, #8 × 1½" flathead brass wood screws, #8 × 2¾" flathead brass wood screws, #14 × 1½" flathead wood screws, 1½" pipe flange, 1½" pipe threaded on one end, exterior finish.

of tape from end to end where shown in the photo at *right*. To hold the half-section together until the epoxy cures, place it on a board covered with waxed paper. Drive nails around the roof section's perimeter where shown. Repeat the procedure with the three remaining roof pieces. Later, remove the nails, and peel the tape from the joints.

3 To true the mating edges of the roof half-sections, support each on a piece of flat stock. (The outside edge of the middle section must be flush with the outside edge of the flat stock.) As shown *below,* trim about ⅛" off the mating edge of each roof half-section.

4 Apply epoxy to the mating edges, and tape together the two roof sections. Later, sand the roof.

Trim the mating edge of each roof half-section on the tablesaw.

Next, build the seed tray

1 To form the tray (C), start by cutting two pieces of ¾" cedar to 7½ × 17¼" long, miter-cutting the ends at a 30° angle where shown on the Seed Tray Drawing.

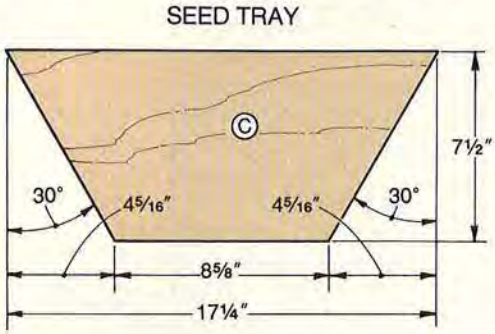
2 Epoxy the two pieces together edge to edge. After the epoxy cures, sand the tray surfaces.

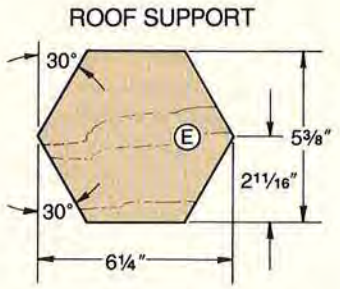
3 Cut the banding pieces (D) to length, miter-cutting the ends at 30°. Check the fit against the tray, then epoxy and clamp (or tape) the banding strips to the tray.

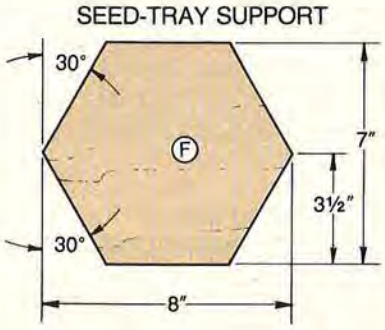
Cut the remaining pieces and assemble the feeder

1 Center the hexagonal column on the seed tray. Trace around the

Drive nails into a scrap board around the perimeter of the roof half-section to hold the assembly together until the glue cures.







edges where the bottom end of the column comes in contact with the tray. Remove the column and drill a pair of 5⁄32" holes inside each outline (see the Exploded-View Drawing for reference). Viewing the same drawing for reference, drill a ⅜" drain hole in each corner of the tray. Screw (no adhesive) the column to the tray.

2 Cut the roof supports (E) and seed-tray support (F) to shape, using the drawings *above* for reference. With the edges and ends flush, epoxy together the three roof supports. Check the fit of the roof support inside the column. Trim or sand the edges of the roof support if necessary for a good fit.

3 Center the roof-support lamination (E) on the bottom side of the roof (B). Drill holes, and then epoxy and screw the roof support to the bottom of the roof. Repeat the procedure to center and fasten the seed-tray support (F) to the bottom side of the tray (C).

4 Stain and finish. (We left ours unstained, and sealed the wood with two coats of Thompson's Water Seal.) Center and screw a 1½" pipe flange to the bottom of the tray support. Bury the bottom end of a 1½" pipe 30" in the ground, and mount the feeder.

Buying Guide

- **Slow-set epoxy.** One 8-oz. bottle of resin and one 8-oz. bottle of hardener, catalog no. WM9, $16 ppd. System Three Resins, P.O. Box 70436, Seattle, WA 98107.
- **8" adjustable triangle.** Acrylic, graduated .5° increments. $14.95 ppd. The Art Store, 600 Harding Road, Des Moines, IA 50312. Or, call 800-652-2225 to order.

Produced by Marlen Kemmet
Project Design: James R. Downing
Photographs: John Hetherington
Illustrations: Kim Downing; Bill Zaun

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☐ **#4** Salt-and-pepper set, bird feeder, honeybee, dresser mirror, crayon caddy, towel ring, house sign.

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☐ **#6** Scandinavian candle holder, door harp, snack tray, Ferris wheel, bandsawed box, music box.

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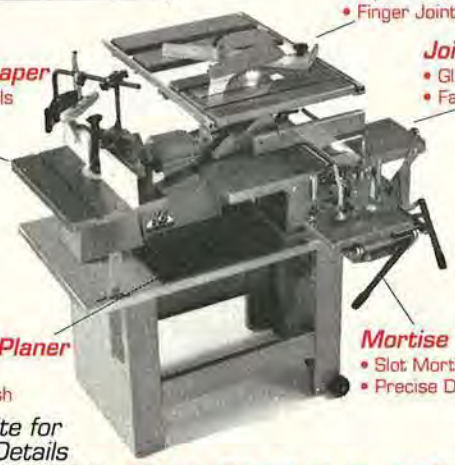

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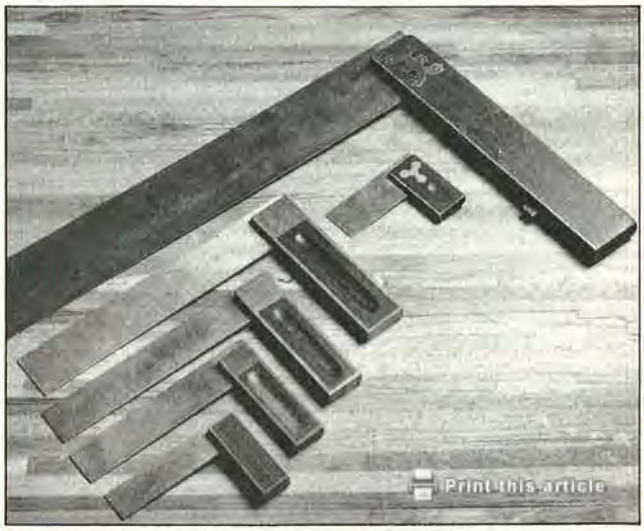

Try squares, top to bottom: 24" tongue try square by I. Wheatcroft, New York, and typical of late 1800's decoration; Stanley patent 1896, rosewood-handled, 3" try square; Stanley "Extra Heavy" No. 10's with steel-framed rosewood handles and 10", 8", 6", and 4" tongue lengths.

Checking for square has always been a critical craftsman concern. Egyptian hieroglyphics, ancient Greek relief carvings, Roman mosaics, and Renaissance art depict framing, or carpenters' squares, similar to those of today. But what we now commonly call the try square, with a handle thicker than the tongue, didn't appear in the woodworker's tool chest until the mid-1600s, when western civilization was emerging from medieval to modern times. There was a growing emphasis on furniture design and construction, and wood craftsmen needed a small square to double-check the joinery of furniture and cabinets. Since this new breed of specialized craftsmen were called "joiners," the small square they developed was at first referred to as a joiner's square.

Prior to the 19th century, try squares were usually handmade by the craftsmen using them. Of all-hardwood construction, try squares of the period featured a through-mortise connecting the tongue to the handle at a 90° angle. Dowels pinned the tongue in place. Made to the size needed (a craftsman might have had many, in different lengths, on hand), these wooden tools were proved square by careful, repeated testing ("trying") and planing.

Try squares for building a nation

Following the Civil War, U.S. manufacturers could focus on tools for a nation set on expansion, instead of armament. Factory-made try squares began

THE TOOL TIME HASN'T CHANGED

to represent a cornucopia of diversity. And slowly, metal began to replace wood.

Tongues of tempered spring steel replaced wooden ones. Brass wear plates protected the faces of rosewood or ebony handles. Beautiful brass escutcheons (ornamental flanges) often held the rivets securing the tongue. In 1870, the Stanley Rule & Level Co. offered more than 25 try squares in different sizes. Many of these have become prized collectors' items. As an example, a Stanley No. 1 try square, with a brass star inlay, has a value of $50—$60.

By 1900, try-square manufacturing hit its zenith. Small companies in the Northeast, such as Goodell-Pratt, Disston, Fulton Tool, Keen Kutter, and Stanley competed for a share of a growing tool market as the nation built westward.

The last major push in woodworking hand tool development took place after World War I. By 1929, Stanley was offering more than 40 different squares, while many earlier competitors dropped out of the market.

Length equals value

Even if you don't plan to collect tools, you'll find having different-sized try squares helpful as you build projects in your home shop. Expect to pay $5—$20 or more for old but usable common sizes and up to $150 for those over 15" long (the 16" length is extremely rare). At the other end of the scale, you'll pay more for try squares 3" and smaller. Try squares from early makers, or those once owned by a known craftsman, increase collectibility and price. Features can increase value, too, such as rosewood or ebony handles or ivory inlay.

Written with Philip J. Whitby
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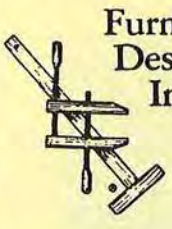

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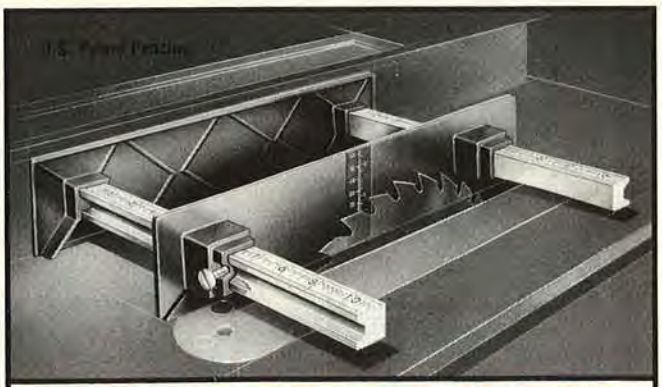

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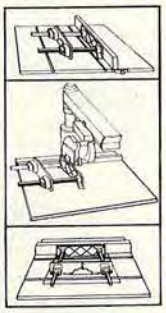

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23-880	8" bench grinder 1/2 H.P.	136	115
23-980	10" bench grinder 1 H.P.	246	235
11-950	8" drill press	164	135
14-040	14" drill press	313	309
40-150	15" hobby scroll saw	178	139
28-160	10" hobby band saw	189	144
31-050	1" belt sander 2.0 amp.	93	78
31-480	4" belt/disc sander	178	139
31-340	NEW1" belt/8" disc sander	226	175

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28-560	16" Band Saw	503	399
33-990	10" radial arm saw	727	569
11-072	32" radial drill press	487	409
37-280	6" motorized jointer	440	379
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50-180	1 H.P. dust collector	535	439
50-181	2 H.P. dust collector	760	599
22-667	13"planer w/2 HP motor. w/stand & ext. wings	1750	1089
33-050	NEW 8-1/4" Sawbuck	742	545
34-330	NEW 8-1/4"Tbl Saw 13A	321	209
34-670	10" mtrzd table saw	437	365
34-985	1/6 H.P. stock feeder	698	599
32-100	NEW station plate joint.	645	459
36-040	NEW 8-1/4 cmpd mitre	216	155

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0395-1	9.6V cdlss. drill w/cse	264	149
0219-1	9.6V cdlss. drill w/cse	277	165
0385-1	7.2V cdlss. drill w/cse	174	105
0224-1	3/8" drill 4.5A magnum	189	114
0234-1	1/2"drill 4.5Amag0-850rpm	199	110
0244-1	1/2"drill 4.5Amag0-600rpm	199	110
0222-1	3/8" drill 3.5A 0-1000 rpm	174	99
0228-1	3/8" drill 3.5A 0-1000 rpm	164	97
0375-1	3/8" close quarter drill	208	119
0379-1	1/2" close quarter drill	243	149
6539-1	Cdls. scrdrv. 190 rpm	113	69
6540-1	Cdls. scrdrv.w/bits&cse.	154	88
6546-1	Cdls.scrdrv.200&400rpm	120	75
3102-1	Plmbrs rt angle drill kit	330	189
3002-1	Electricians rt angle drill	320	185
5399	1/2" D-hdle ham drill kit	304	175
1676-1	H.D. Hole Hawg w/cs	415	229
6511	2 sp SawZall w/case	214	125
6405	8-1/4" circle saw	219	129
6750-1	Drywall gun 0-4000 4.5A	154	95
6507	TSC SawZall w/case	229	129
6170	14" chop saw	430	259
6012	Orb.sand 3-5/8"x7-3/8	189	115
6014	Orb.sand 4.5" x 9.25"	199	118
6305	6-1/4"cdls. circle saw	299	175
8977	Var. temp heat gun	114	75
5397-1	3/8" v/sp ham. drill kit	232	137
5371-1	1/2" v/sp ham. drill kit	318	185
3107-1	1/2" v/sp rt angle drill kit	340	195
6754-1	Drywall gun 0-4000 4.5A	179	119
6747-1	Drywall driver-0-2500	154	99
0230-1	3/8" drill 0-1700 rpm	179	105
3300-1	1/2"v/sp mag rt angle kt	299	179
5660	Router 1-1/2 H.P.-10A	299	185
5680	Router 2 H.P.-12A	350	225
5455	7/8" polisher 1750rpm	209	129
6215	16" chain saw	280	169
8975	Heat gun	89	59
6365	7-1/4" circular saw	195	114
6366	7-1/4"circ.saw w/fnc&bld	204	119
6388	7-1/4"circ.saw w/fence blade & case	233	129
0216-1	2 sp cdls drill Hi-torque	222	129
0235-1	1/2"drill kyls. chuck mag	209	119
6016	1/4 sheet pad sander	79	49
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LU82M010	Cut-off	10° 60	77	45
LU84M011	Comb.	10° 50	65	38
LU85M010	Super Cut-off	10° 80	96	55
LM72M010	Ripping	10° 24	57	36
LU73M010	Cut off	10° 60	70	44
LU87M010	Thin kerf	10° 24	60	39
LU88M010	Thin kerf	10° 60	74	44
LU98M010	Ultimate	10° 80	107	69
LU89M010	Non-ferrous mtl	10° 72	87	55
PS203	Gen'l Purp.	7-1/4° 24	25	19
PS303	Plywood	7-1/4° 40	36	25
SD306	6" Dado - Carbide		184	105
SD308	8" Dado - Carbide		196	109
F0	1-3/4"X5/8"Bisc.1000 Qty.		32	27
F10	2-1/8"X3/4"Bisc.1000 Qty.		32	27
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FA	Assor. Biscuits 1000 Qty.		34	29
WC106	6 pc.chisel set w/cs1/4"-1"		73	52
WC110	10 pc.chisel set w/cse		119	78
FB100	16 pc. forstner bit set		284	155
FB107	7 pc. forstner bit set 1/4"-1"		82	49
94-100	5 pc router bit door system		288	159
JS100	Biscuit Jointer w/case		300	159
CE82	Planer w/case carb blds.		218	129
FT2000	3-1/4 H.P. plunge router		299	189

MAKITA CORDLESS

Model		List	Sale
6070DW	3/8" v/sp rev. drill, 7.2v	130	78
6071DWK	3/8" v/sp rev. drill w/removable batt, 7.2v	199	115
5090DW	3-3/8" saw kit, 9.6v	256	139
6010DWK	3/8" cdls drill kit, 7.2v	164	95
6010SDW	3/8" cdls drill, 7.2v	99	65
DA3000DW	3/8" angle drill, 7.2v	251	139
8400DW	Hammer drill kit, 9.6v	272	149
4390DW	9.6v cdls. recip saw kit	230	128
4300DW	Jig saw kit comp., 9.6v	232	129
6012HDW	2 spd. driver drill w/clutch & cse 9.6v	236	119
6092DW	V/sp drill, kit comp	250	125
6093DW	V/sp drill w/clutch-comp.	261	127
6891DW	Drywall gun 0-1400 9.6v	237	135
632007-4	9.6 volt battery	48	30
632002-4	7.2 volt battery	40	28
5007NBA	7-1/4" saw w/elec. brake	233	128
5008NBA	8-1/4" saw w/elec. brake	284	156
B04510	1/4 sheet pad sander	85	54
9900B	3"x21" belt sander w/bag	268	148
9924DB	3"x24" belt sander w/bag	282	149
9045N	1/2 sht fin. sand. w/bag	231	129
4200N	4-3/8" circ. saw 7.5A	225	127
4301BV	Orb. v/sp jig saw 3.5A	289	155
JR3000V	Vs. recip saw w/cse	227	129
LS1020	New 10" miter saw	463	245
9820-2	Blade sharpener	373	199
1900BW	3-3/4" planer w/cse	209	115
1911B	4-3/8" planer 7.5A	240	139
1100	3-1/4" planer w/case	401	219
9207SPC	7" sander-polisher	276	155
3601B	1-3/8 H.P. router	255	139
3700B	1/2 H.P. trimmer	190	109
9501BZ	4" grinder, 3.5 amp	126	75
B04530	6" round sander	101	59
B04550	1/4 sht pad sand w/bag	86	55
DA3000R	3/8" angle drill	270	148
6302	3/8" v/sp 5.2Amp drill	209	119
HP2010N	3/4" v/sp hmr. drill w/cs	300	165
2708W	8-1/4" table saw	504	259
2711	10" table saw w/brake	841	489
2030N	12" planer/jointer	3120	1775
2040	15-5/8" planer	2595	1475
1805B	6-1/8" planer kit /case	679	359
5005BA	5-1/2" circular saw	223	135
6404	3/8" drill 0-2100 rpm 2A.	104	65
6510LVR	3/8"drill rev. 0-1050 rpm	145	79
6013BR	1/2" drill rev. 6Amp	241	139
5402A	16" circular saw-12Amp	636	349
3612BR	3 H.P. plunge router	377	189
9401	4"x24"belt sander w/bg	318	169
3620	1-1/4 H.P.plunge router	192	109
4302C	V spd. orb. jig saw	302	159
5077B	7-1/4" Hypoid saw	252	145
LS1440	14" Miter saw	721	435
2414	14"cut-off saw AC/DC	351	199
5007NB	7-1/4" circ saw 13A	209	114
3612B	3 HP plunge rout sq/bs	377	189

SENCO AIR NAILERS

Model		List	Sale
SFN1	Finishing nailer 1"-2"	377	269
SFN2	Fin. nailer 1.5"-2.5"	571	395
SN325	Nailer 1-7/8"-3-1/4"	665	445
M2	Gen'l purpose 1-3/8"-2"	475	345
SN4	Gen'l purpose 2"-3-1/2"	685	469
LS2	Pinner 5/8"-1"	351	249
SKS	Stapler 5/8"-1-1/2"	351	249
LS5	Pinner 1"-1-1/2"	399	285

SKIL SIZZLERS

Model		List	Sale
6850-02	NEW1/2" EMH hammer drill w/case 4 amp	255	129
5510	(551)5-1/2" circ saw	112	105
5625	(552)6-1/2" circ saw	175	129
5656	(553)7-1/4" circ saw	132	125
5750	(807)7-1/4" circ-dr ft	198	145
5790	(810)10-1/4" circ - dr ft	400	275
5825	(367)6-1/2" worm saw	229	155
5965	(825)8-1/4" worm saw	250	164
4580	Vari - orbit jig saw w/cse	144	105
3810	10" Miter saw	263	225
3810S	3810 w/60 tooth carb bld.		239
7575	1/4" palm sander	52	49
77	7-1/4" worm drive saw	230	145
5350	2-1/3 HP circ. saw	80.99	77
5250	2-1/4 HP circ. saw	68.99	66
2735-04	12v v/spd cordless drill complete w/cse. & 2 batt.	210	144

LEIGH DOVETAIL JIGS
D1258R-12-List 314.00-Sale 269.00
D1258R-24-List 375.00-Sale 305.00
LEIGH INSTRUCTIONAL VIDEO-SALE 29.00!!

MMT 500	NEW 24" multiple mortise & tenon jig	509	399
MMT	12" multiple mort. & tenon attachment for D1258-12	269	219
MMT	24" multiple mort. & tenon attachment for D1258-24	299	239

HITACHI TOOLS

Model		List	Sale
TR8	Plunge router, 1-1/2 H.P.	219	119
M12V	NEW 3H.P. v/sp router	437	249
TR12	Plunge router, 3 H.P.	354	178
C10FA	10" dlxe. mitre saw	490	275
C12FA	NEW12" mitre saw	586	339
C8FB	8-1/2" slide cmpd saw	859	469
FREUD LU91M008	8.5"c/bld 48 tooth	58	49
C15FB	15" miter saw	745	409
FREUD LU85M015	15"c/bld 108 tooth	181	115

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34-444 Table Saw Complete w/1-1/2 H.P. motor & stand 619.00

34-445—34-444 Table Saw complete w/30"Unifence 799.00

37-154 DJ15 6" Jointer w/ 3/4 H.P. motor 1029.00

28-28314" Band Saw w/enclosed stand 3/4 H.P. motor 699.00

70-200 NEW 20" Drill Press 709.00

17-90016-1/2" Floor Drill Press 385.00

40-601 18" Scroll Saw w/stand and blades 699.00

DELTA #34-080 10" MITER BOX XTRA SPECIAL 199.00 List 289.00

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PIRANHA By Black & Decker CARBIDE TOOTH SAW BLADE

Model #	Dia.	#Teeth	List	Sale
73-716	6-1/2	18	13.70	7.35
73-756	6-1/2	36	30.45	16.85
73-717	7-1/4	18	13.90	7.99
73-737	7-1/4	24	17.20	9.29
73-757	7-1/4	40	31.30	16.79
73-758	8	40	43.80	24.85
73-759	8-1/4	40	44.65	24.99
73-719	8-1/4	22	19.65	11.95
73-739	9	30	32.35	16.79
73-769	9	60	68.35	35.99
73-715	5-1/2	16	13.70	7.99
73-704	7-1/4	18	20.20	12.85

THE SPECIAL BLACK AND DECKER PIRANHA BLADE PRICES ARE BACK!!!

Model#	Dia.#	Teeth	List	Sale
73-740	10	32	33.20	15.95
73-770	10	60	61.46	29.95
73-711	10	50	65.08	29.95

JORGENSEN STEEL I-BAR CLAMPS

Model	Size	List	Sale
7224	24"	27.11	17.55
7236	36"	29.10	18.65
7248	48"	31.96	19.75
7260	60"	35.60	23.55

ADJUSTABLE HANDSCREWS BY JORGENSEN

Item#	Jaw Length	Open Cap	List	Sale	Box of 6
#3/0	6"	3"	15.57	8.89	49.98
#2/0	7"	3-1/2"	16.74	9.95	53.55
#0	8"	4-1/2"	18.63	11.95	62.95
#1	10"	6"	21.30	12.99	71.49
#2	12"	8-1/2"	24.45	15.95	81.89
#3	14"	10"	31.01	18.95	104.95
#4	16"	12"	40.30	24.89	146.85

STYLE 37 2-1/2" Throat 1/4"x3/4" JORGENSEN

Item#	Jaw Length	List	Sale	Box of 6
3706	6"	9.30	6.29	35.65
3712	12"	10.30	6.79	38.59
3718	18"	11.37	7.35	41.69
3724	24"	12.42	7.99	45.25
3730	30"	13.65	9.05	51.19
3736	36"	15.15	9.95	56.65

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	3/4" black pipe clamps	13.10	7.89	83.99
52	1/2" black pipe clamps	10.93	6.30	68.25

PANASONIC CORDLESS

Model		List	Sale
EY6205B	NEW v/spd. 12 volt drill w/15 minute charger	390	219.
EY6200B	NEW 2 spd. 12 volt drill d-hdle w/15 minute charger	350	195
EY6281B	NEW v/spd. 9.6 volt drill w/15 minute charger	350	198
EY571B	V/spd. 9.6 volt drill	239	135

BOSCH

Model		List	Sale
1581VS	Top hdle. jig saw	239	133
1582VSC	NEW CLIC Barrell jig saw	245	133
1582VS	Barrell grip jig saw	225	124
Bosch metal case for above jig saws		34	30
Bosch blade assortment for jig saws 30 of Bosch's best selling blades			25.99
1942	Heat gun 650°-900°	99	75
1272D	3"x24" belt sander w/bag	299	175
1273D	4"x24" belt sander w/bag	315	182
11-212VSR	Bulldog 3/4"SDS rtry.dril	339	195
1198VSR	1/2" v/sp hammer drill	229	135
1608	5.6A lam trimmer	140	89
1608L	Same/above w/trim gd	145	92
1609	5.6A offset base trimmer	205	122
1609K	Lam Installers kit w/1609	295	169
1601	1 HP Router	165	105
1602	1-1/2 HP Router	199	125
1603	1/2 HP D hndl router	223	139
1604	1-3/4 HP 2 hdle router	219	122
1604K	Same/above w/cs&acc.	269	166
1606	1-3/4 HP D hdle. Router	243	149
3258	3-1/4" planer w/blde grd	210	129
3270D	3"x21"belt sand.w/bag	225	135
1273DVS	V/sp 4x24 belt sander	339	189
1611	3 H.P. plunge router	349	205
1611EVS	3 H.P. V/sp router	410	234
1651	7-1/4"circ.saw drop ft	179	109
1654	7-1/4"circ. saw pvt base	179	109
1632VSRK	Recip saw 8.4A orb-v/sp.	225	135
3050 VSRK	NEW 9.6V v/sp cdls.drill w/case & 2 batteries	235	135
3263DVS	NEW 5" Random orbit disc sander 2.3 Amp	159	119

HEGNER SCROLL SAWS

Model		List	Sale
Multi Max II	w/stand	699	625
Multi Max 14	var./spd. w/stand	799	695
Multi Max 18	var./spd. w/stand	999	819

BOSTITCH AIR NAILERS

Model		List	Sale
N80C-1	Utility coil nailer	795	399
N80S-1	Stick nailer	795	399
T36-50	Sheath & decking stapler	595	334
N12B-1	Coil roofing nailer	795	399
N60FN-2	Finishing nailer	625	335
T31	Brad nailer	245	149

ELU BY BLACK & DECKER

Model	Description	List	Sale
3338	2.25 HPv/sp plunge rout.	387	255
3337	2.25 HP plunge router	356	238
3304	1 HP v/sp plunge router.	261	178
3375	3-1/8"univ. planer 7.2A	280	188
3380	Biscuit jointer w/case	485	318
4024	3x21 v/sp belt sander	289	195
3303	1 H.P. plunge router	210	159
4023	3x21" belt sander 5.2A	261	185
4029	4x24" belt sander 9.2A	469	319

BLACK & DECKER

Model		List	Sale
1166	3/8"drill 0-2500rpm 4A	96	59
2600	3/8"drill 0-1200rpm 4.5A	125	85
1707	8.5"crosscut miter saw	813	449
1703	10"miter saw w/73-770 bld	313	179
3157	Orbital v/sp jig saw	203	125
3153	Variable speed jig saw	195	120
3047-09	7-1/4"super saw cat w/br.	282	169
3048-09	8-1/4"super saw cat w/br.	297	185

BIESEMEYER FENCES

	50" commer. saw fence	329	285
	52" homeshop saw fence	249	225

JET TOOLS

Model	Description	List	Sale
JBS-14MW	14" band saw 1 HP	482	385
JTS-10	10" tbl saw w/std1.5 HP	554	459
JTS-12	12" tbl saw w/std1.5 HP	630	509
JWS-18	1/2" shaper w/std1 HP	479	375
JJ-4	4" jointer, 1/2 H.P.	310	285
JJ-6	6" jointer, 3/4 H.P.	465	385
JWP12	12.5" bench plnr 2 H.P.	569	375
JWP12D	Dust chute for JWP12	45	22
JSG-6	6 x 48 belt & 12"disc sander, 1-1/2 H.P.	634	465
OR1458	14"bnch drill prs .5 HP	279	259
OR1758	17"bnch drill prs.5 HP	319	279
OR1458F	14"flr drill press 3/4 HP	369	325
OR1758F	17"flr drill press 3/4 HP	395	339
OR2501F	20.5"flr drill press1 HP	655	519

RYOBI SPECIALS

Model	Description	List	Sale
R500	2-1/4 HP plunge router	326	155
TS25IU	10" miter saw	392	185
TS25IUS	10" miter w/acc. kit & B&D 73-070 carb bld	435	225
AP10	10" surface planer 13A	820	358
RA200	8-1/4" radial arm saw	515	249
RE600	3 H.P. plunge router	398	215
R150K	1 HP plunge router w/cs	206	105
BE321	3x21" v/sp belt sander	259	135
JP-155	6-1/8" jointer-planer	602	315

PORTER CABLE

690	1.5 HP router 8A	225	128
691	1.5 HP router D hdle	245	137
536	1.5 HP speedmatic router	310	195
518	3 HP 5 speed router	560	338
520	3 HP 15A router	510	315
695	1.5 HP router/shaper	310	198
696	H.D. shaper table	170	119
351	3"x21"belt sand w/o bag	225	128
352	3"x21"belt sand w/bag	235	133
360	3"x24"belt sand w/bag	310	175
361	3"x24"belt sand w/o bag	290	169
362	4"x24"belt sand w/bag	325	185
363	4"x24"belt sand w/o bag	310	179
315-1	7-1/4" top hdle circ saw	195	115
9315-1	315-1 comp w/cs&carb bld.	225	129
617	7-1/4" pushhandle saw	195	115
9617	617 comp. w/cs & carb bld.	225	129
314	4-1/2" trim saw 4.5A	215	128
9548	X HD bayonet saw w/cs	290	192
9629	Recip saw v/sp 8A	235	137
9627	Recip saw 2 spd 8A	225	128
666	3/8"HD vsp drill 0-1200rpm	185	122
621	3/8"HD vsp 0-1000rpm	155	95
320	Abrasive plane 3Amp	160	109
9118	Porta plane kit 7Amp	335	185
7545	0-2500 drywall gun 5.2A	169	104
7540	0-4000 drywall gun 5.2A	165	102
505	1/2 sheet pad sander	195	109
7511	3/8" v/sp drill 5.2Amp	185	112
7514	1/2"v/sp drill 0-750rpm	195	119
537	1.5 HP.D hdle router	325	203
7548	Top hdl jig saw 4.8A	230	129
7648	Barrel grip jig saw 4.8A	225	139
330	Speed block sand 1/4 sht	97	55
555	Plate biscuit jointer w/cs	299	165
345	6" saw boss 9Amp	170	99
9345	345 comp. w/cs&carb bld.	220	129
9650	"Stair Ease" stair templet	194	129
100	7/8 H.P. router	165	105
5008	Dovetail template kit	99.50	79
5009	Mortise &Tenon jig	54.95	49
1516	Omni-Jig	395	265
9647	TIGER CUB recip saw	195	119
9850	12v cordless drill w/cse.	230	135
8500	Extra 12v battery	48	35
	NEW Tools By Porter Cable!		
9637	Full v/sp recip saw 8 A	240	135
7538	3-1/4 HP plunge router	399	249
7399	5.6A drywall cutout unit	120	75
7310	5.6A lam trimmer	145	89
7312	5.6A offset base lam trim.	209	119
7319	5.6 A tilt base lam trimmer	165	105
97310	Lam Trim Kit w/std. Base, Tilt Base, Offset Base, Slitter Base, Guide & Cs	330	185
7334	5" random orbit sander	205	119
693	1.5 H.P. plunge router	280	165
6931	Plunge router base	120	75
	7334K Kit includes: 7334 Sander 44350 case, w/1 roll of 100X & 150X discs SUPER SPECIAL 149.95		

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Print this article

BASEBALL'S BIG STICKS

Meet the manager, Bob Lemon. Then, some of the lineup's starters: Estel Crabtree, Al Burch, Howard Maple. The coaching staff includes Ty "The Georgia Peach" Cobb.

What baseball team is this? It belongs to Jack Connelly of Webster, New York, who came up with it when he started daydreaming about woodworking and baseball. To make this team, a player needs major league experience and a name that relates to wood or trees. That's why Bill Greenwood holds down second base and Ted "The Splendid Splinter" Williams patrols left field. Jack, who is a retired industrial arts teacher, even found the perfect owner for the team—Branch Rickey, of course.

Here's more of the team: coach George Wood; shortstop Gene "Stick" Michael; third baseman Wayne "Twig" Terwilliger; right field George "Hickory" Jackson; pitcher William "Lumber" Price. On the bench you'll find George "Stump" Weidman, Forest "Woody" Jensen, Fred Boardman, James Woods, and Walter Linden. And, warming up in the bullpen: Austin "Limb" McHenry, "Hickory Bob" Harmon, Roy Branch, and Eddie Plank.

TIMBER TOWNS

Francis Holmes, director of the Shade Tree Laboratories in Amherst, Massachusetts, has a tree trivia hobby, too. He collects town names associated with trees, and has pinned down more than 2,000. Some are named for specific trees, such as Black Oak, Arkansas. Others, though, classify somewhat indirectly—Edgewood, Georgia, for instance. Holmes also includes names like Boston, derived from the Dutch word *bos*, or forest.

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The Hardwood Manufacturers Association (HMA), with offices in Pittsburgh, established the toll-free information service to assist consumers with questions about selecting hardwood products and caring for them through the years. According to Susan Regan, HMA executive vice president, calls are answered by a voice-mail system 24 hours a day, and staffers check the lines twice a day. "Urgent calls receive almost immediate attention," she says. You can also request HMA brochures.

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INTARSIA'S GURU GOES VIDEO

After Judy Gale Roberts, *right,* appeared as our cover story two years ago (see "She Paints With Wood," *WOOD®* magazine, August 1988) and introduced intarsia to our readers, she was flooded with fan mail and pattern requests. In fact, Judy and workmate Jerry Booher started a newsletter to regularly inform a growing number of intarsia disciples of new pattern offerings and tips on wood mosaics.

Well, Judy and Jerry have taken the next logical step in servicing intarsia followers. They've produced a 90-minute video in their Lufkin, Texas, studio that—for $29.95 plus $3 postage—leads intarsia beginners from selecting rough stock to hanging the project, with lots of commentary. For details and an order blank, write: *Judy Gale Roberts Intarsia, P.O. Box 1925, Lufkin, TX 75902.*

Illustration: Jim Stevenson Photograph: Bob Hawks

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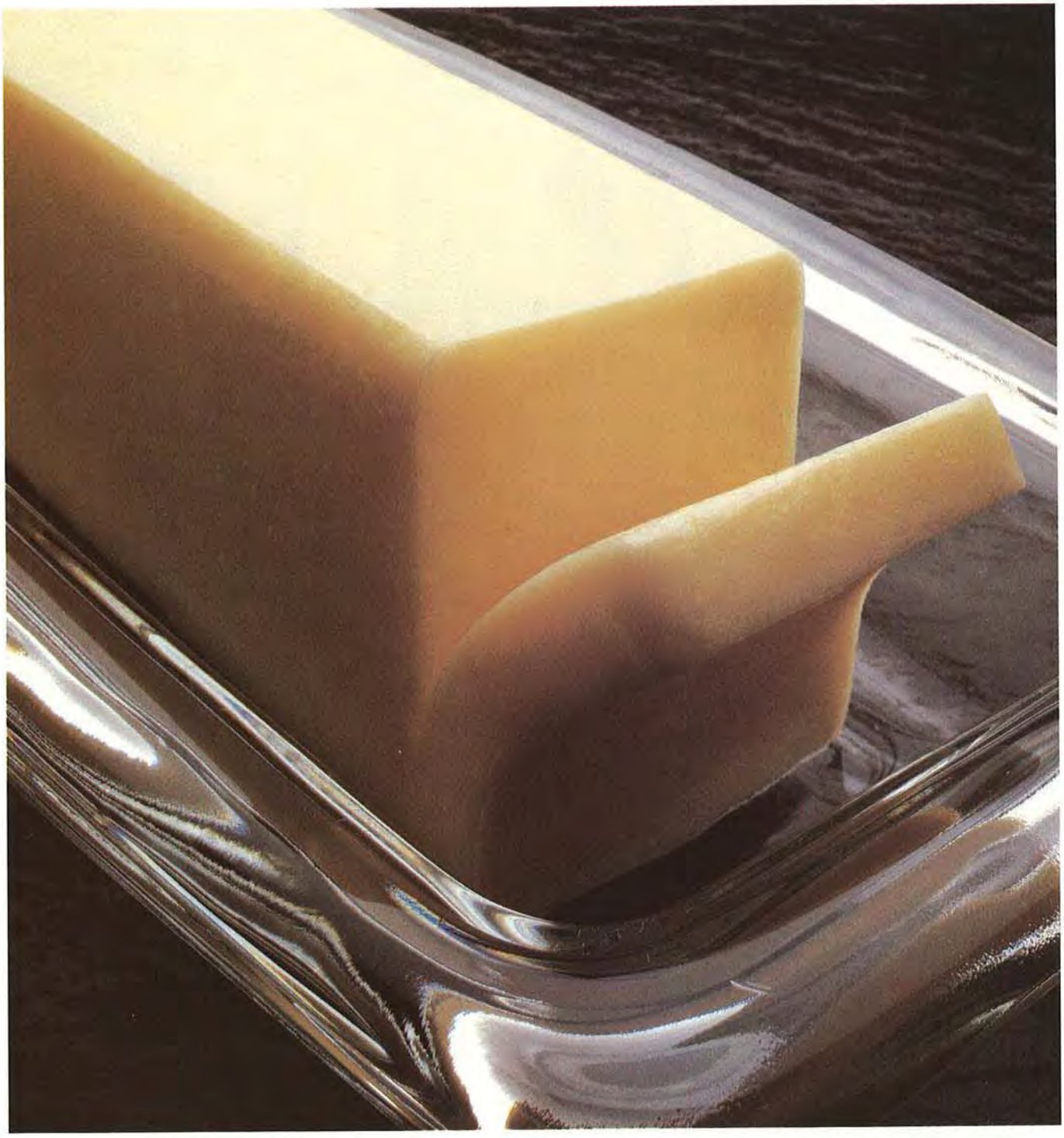

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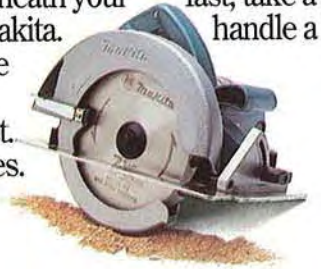

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